

# TEXAS A&M PLANT BREEDING BULLETIN

November 2017

**TEXAS A&M UNIVERSITY--EDUCATING AND DEVELOPING PLANT BREEDERS  
WORLDWIDE TO ALLEVIATE HUNGER AND POVERTY THROUGH GENETIC  
IMPROVEMENT OF PLANTS**

**Dr. Stanley Omar PB. Samonte joined the Texas A&M AgriLife Research and Extension Center at Beaumont, TX as an Associate Professor on September 4, 2017. His hybrid rice breeding program aims to develop elite male sterile and restorer lines, and hybrid cultivars that have improved and stable grain yield and are competitive with existing commercial hybrids. Additional research goals include improved grain quality (head rice percentage, low chalky grain percentage, and translucency), resistance to low temperature stress during germination and seedling growth, and resistance to pathogen and insect stresses.**

**Omar received his B.S. and M.S. degrees from his home country, Philippines, in 1985 and 1990, respectively, and received his Ph.D. from Texas A&M University in 1999 under the direction of Dr. Ted Wilson. After receiving his Ph.D., Dr. Samonte was a postdoctoral research associate at the Texas A&M AgriLife Research and Extension Center at Beaumont from**



**2003 to 2007 and an associate research scientist from 2007 to 2012. During this time, he was associated with the rice breeding program of Drs. Ted Wilson and Rodante Tabian where he conducted breeding activities aimed at developing cultivars with improved yield, water use efficiency, improved rice grain quality and development of phenotypic selection criteria relative to GxExM. Omar also conducted hybrid rice research, investigating heterosis and relationships between hybrids and their parents in terms of agronomic and physiological traits. Overall, Dr. Samonte has worked with breeding teams in California and Texas that led to the release of four rice cultivars: Calmochi-203 (California), M-209 (California), A-202 (California), and Colorado (Texas).**

**Before joining Texas A&M AgriLife Research, Dr. Samonte was a plant breeder at the Rice Experiment Station (RES) at Biggs, California, from 2012 to 2017. At RES, he worked on Calrose-lineage varietal improvement in grain yield and quality, resistance to biotic and abiotic stresses, and stability of six rice grain types, namely, conventional short grain, low amylose short grain, waxy short grain, premium quality short grain (Koshihikari type), premium quality medium grain, and bold grain (Arborio type). In addition, he collaborated with pathologists and geneticists to improve the breeding germplasm of these grain types by pyramiding blast resistance genes through marker-assisted selection. Omar also developed early-maturing mutant Koshihikari-type lines adapted to California production.**

**After obtaining his PhD in Planting Breeding from Texas A&M in 1999, Dr. Samonte worked as an assistant professor at the University of the Philippines at Los Baños. He taught graduate and undergraduate courses in plant breeding and agronomy, as well as advised students in their research.**

**Omar's wife, Aurelia "Rely" has an MS degree in Family Consumer Science and a Master of Education in Counseling and Development, both obtained from Lamar University at Beaumont, Texas. She is currently working at California State University (CSU) at Chico as a Nutrition Education Specialist and Program Manager, but is looking to continue her career in Texas. Their eldest son, Jared Austin, is a computer science major at CSU Chico, while Vincent Enrique is a freshman at West Brook High School at Beaumont. Tennis and traveling are the hobbies common within Omar's family.**

**Welcome aboard Dr. Samonte!**

# Meetings of Interest Meetings of Interest

## **International Plant & Animal Genome**

**XXVI** will meet January 13-17, 2018 in San Diego, CA, USA. More information at <http://www.intlpag.org/>.

**The Beltwide Cotton Conferences** will be held in at the Marriott Rivercenter Hotel in San Antonio, TX, January 3 – 5. More information can be found at <https://www.cotton.org/beltwide>.

## **National Association of Plant**

**Breeders, NAPB** will hold their annual meeting at the University of Guelph, Ontario, Canada August 7 – 10, 2018. More information will be available soon at <https://www.plantbreeding.org>.

# Distance Plant Breeding at Texas A&M

## Distance Plant Breeding at Texas A&M

**Distance Plant Breeding Program and Continuing Education courses available for Fall 2017**

**(<https://scsdistance.tamu.edu/available-courses>)**

## Continuing Education

### **Available Courses**

**Spring Courses: January 16 – May 8, 2017**

**To fully participate in our continuing education courses, students should have:**

- **High speed internet connection and updated browsers, including Internet Explorer and either Chrome or Firefox**
- **Common plug-ins (e.g. Adobe Reader, Flash Player, Virus Protection, Java, etc.)**
- **Speakers and Webcam with microphone**
- **Skype**
- **Ability to either scan or fax course documents to the instructor**

### **Spring 2018**

**Plant Breeding Fundamentals – Full Course (3 Units) – Cost \$679.65**

**January 16 -May 8, 2018**

**Introduction to the field of plant breeding for students without a plant breeding background. Includes common plant breeding terminology and introduction of concepts. Genetic improvement of crops by hybridization and selection; special**

**breeding methods and techniques applicable to naturally self-pollinated, cross-pollinated and asexually reproduced plants.**

## **Basic Plant Breeding - Full Course (3 Units) - Cost - \$679.65**

**January 16-May 8, 2018**

**Basic Plant Breeding can be taken as an entire course (all three units) or each unit can be taken individually. For participants in our Professional Certificate in Plant Breeding and Genetics, completion of all three units is required.**

### ***Unit 1 - Introduction to Basic Plant Breeding Cost - \$226.55***

***January 16 – February 16, 2018***

**Introduction to Basic Plant Breeding provides a review of plant reproduction, genetic variation, gene banks, germplasm preservation, gene segregation, the power of selection and its role in plant breeding, and an introduction to intellectual property and its role in the life of a plant breeder. This unit is designed to prepare the participant to explore the genetics and methodologies employed by plant breeders of self and cross pollinated crop species in units two and three of Basic Plant Breeding.**

### ***Unit 2 - Breeding Self Pollinated Crops Cost - \$226.55***

***February 19 – March 30, 2018***

**The frequency of any specific heterozygous locus will be reduced by 50% for every generation of selfing, resulting in a mixture of homozygous lines within any natural population. Phenotypic selection within heterozygous generations will lead to homozygous or near homozygous germplasm lines or cultivars under self-pollination. This unit is designed to communicate plant breeding methodologies that take advantage of the genetic consequences of natural or forced self-pollination in agronomic crops. Topics will include: [1] the basics of segregation, [2] breeding methodologies, [3] the grain sorghum conversion program-an example of backcrossing in a different direction, [4] review of a commercial soybean cultivar development program, and [5] a review of the types of genetic releases from Texas A&M AgriLife Research.**

### ***Unit 3 - Breeding Cross Pollinated Crops Cost - \$226.55***

***April 2 – May 8, 2018***

**Topics covered include: quantitative genetics and plant breeding, effects of selection on Hardy Weinberg Equilibrium, mating designs with cross pollinated crops, breeding methods for cross pollinated crops, deviations from Mendelian ratios, genetic male sterility and hybrid seed production, seed certification and types of release.**

**Recommended textbooks are “Breeding Field Crops” by J.M. Poehlman and D.A. Sleper, and “Principles of Cultivar Development” by W.F. Fehr. A final exam will allow the participant to assess their grasp of topics covered. Participants in the Plant**

**Breeding and Genetic Certificate Program must score 70% on the final exam for each unit.**

**This is a "self-paced" course and is available for viewing for a limited time. Time commitment is individual student driven. Few outside assignments are made. Students should view each lecture, review all previous lectures and be prepared to discuss any issues that are unclear. Each unit has a printable note set and most units have a set of review questions that can be used as a tool to check your comprehension and grasp of unit concepts. Feel free to contact the instructor, Dr. Wayne Smith, by e-mail ([cwsmith@tamu.edu](mailto:cwsmith@tamu.edu)) or phone (979-845-3450) with any questions you have or if you need additional information.**

### **Analysis of Complex Genomes – Full Course (3 Units) – Cost - \$679.65 January 16-May 8, 2018**

**Genome structure, organization and function of model organisms and higher eukaryotes; theory and methodology of genetic and physical mapping, comparative genomics, sequencing, sequence analysis and annotation; emphasis on understanding the function of complex genomes, genome-wide expression analysis, genetic and epigenetic mechanisms; X-inactivation, imprinting, gene silencing, transposons, genome duplication and evaluation. Requires an in-depth and working knowledge of basic and advanced plant breeding concepts.**

*Unit 1 – DNA Marker Technology and Genetic Mapping      Cost - \$226.55  
January 16 – February 16, 2018*

*Unit 2 – Recombinant DNA and Cloning      Cost - \$226.55  
February 19 – March 30, 2018*

*Unit 3 – Sequencing Genomes and Other Genomic Tools      Cost - \$226.55  
April 2 – May 8, 2018*

### **Quantitative Genetics and Plant Breeding - Full Course (3 Units) - Cost - \$679.65**

**January 16-May 8, 2018**

**Applied aspects of quantitative genetics in plant breeding; examination of methodologies to analyze quantitative variation in crop species; genetic phenomena (inbreeding, heterosis and epistasis); quantitative trait loci (QTL) mapping and marker-assisted selection (MAS); genotype by environment interaction, heritability multiple traits and selection theory with implications in plant breeding. Requires an in-depth and working knowledge of basic and advanced plant breeding concepts.**

### **Introduction to Host Plant Resistance (1 Unit) - Cost - \$226.55**

*January 19 – February 19, 2016*

**Host plant resistance programs from the standpoint of the plant breeder.**

**Other Academic and Continuing Education courses in plant breeding and related disciplines that will be available during other semesters include Host Plant Resistance; Crop Production; Selection Theory; Marker Assisted Selection; Genomic Analysis; Field Crop Diseases; Field Insects; Essential Nutrients in Crop Growth; and others. For more information visit <https://scsdistance.tamu.edu/> or contact LeAnn Hague, Distance Education Coordinator in Soil and Crop Sciences at [leann.hague@tamu.edu](mailto:leann.hague@tamu.edu) or (979) 845-6148.**

# Distance Degrees in Plant Breeding

**M.S. and Ph.D. degree programs at Texas A&M.**

**Visit <https://scsdistance.tamu.edu/plant-breeding-distance-education/> for details.**

**Please direct comments concerning this bulletin to Wayne Smith, [cwsmith@tamu.edu](mailto:cwsmith@tamu.edu) or 979.845.3450.**