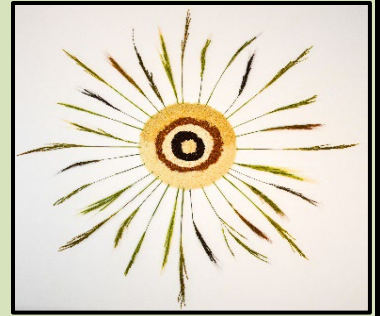




**Dale Bumpers National Rice Research Center
USDA-ARS
Stuttgart, Arkansas**



FEBRUARY 2022

MONTHLY RESEARCH HIGHLIGHTS

For More Information: Dr. Yulin Jia, Acting Research Leader/Center Director
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- **Technology Transfer**
- ✓ **Interactions with the Research Community**

On February 15, Dr. Yulin Jia gave an overview of research opportunities at Dale Bumpers National Rice Research Center to 30 faculty members of 1890 land grant universities who are interested in applying for faculty research sabbatical program at USDA ARS. The meeting was organized by Dr. Nina Lyon Bennett, Assistant Dean for Academics, School of Agriculture, Fisheries & Human Sciences, University of Arkansas at Pine Bluff.

On February 16, Dr. Shannon Pinson provided to Dr. Lew Ziska at Columbia University, New York, NY, seed harvested over an eight-year period for the purpose of studying the effect of annual differences in field temperatures on the concentration of arsenic in rice grains.

On February 22, Dr. Shannon Pinson provided information to Dr. Debasis Golui at North Dakota State University, Fargo, ND, regarding selection of rice accessions for use in studies on arsenic uptake by rice plants.

As part of a collaboration between Dr. Georgia Eizenga (DBNRRRC), and Dr. Diane Wang (Purdue University), Master's student Racheal Imel (Purdue University) evaluated water-deficit responses in wild-by-cultivated rice introgression lines in a high throughput phenotyping facility at Purdue University. Aaron Jackson and Dr. Jeremy Edwards shared the merged gene annotation files they developed from on-line databases for identifying candidate genes with Rachel so she could identify the underlying candidate genes associated with tolerance to reduced water



High throughput phenotyping for response to water deficit.

On February 25, Dr. Yulin Jia provided information to a faculty member from Texas Tech University, Lubbock and assisted to establish a research project with University of

Arkansas- Pine Bluff and Dale Bumpers National Rice Research Center on genetic and molecular regulation of plant immunity.

✓ **Rice Germplasm Distributed**

During the month of February, 532 rice genetic stocks were shipped to researchers in the United States, India, Japan, and Spain from the Genetic Stocks *Oryza* (GSOR) collection.

During this month Dr. Anna McClung provided two rice cultivars to researchers at University of Arkansas, Fayetteville studying waxy rice properties and three rice cultivars differing in arsenic uptake to researchers in North Dakota State University. In addition, two and four cultivars were sent for commercial rice production in South Carolina and Maryland, respectively.

New Awarded Grants

Dr. Georgia Eizenga is a CoPI for NIFA-AFRI (Plant Breeding for Agricultural Production): Plant Breeding Partnership: Modeling genetic variation of rice hydraulic response to changes in soil moisture; with Diane Wang, PI (Purdue Univ.) and Amelia Henry, CoPI (International Rice Research Institute. IRRI); \$80,000, 3 years.

The main object is to develop a process-based framework to model genotype-by-environment interactions that result from genotype-specific rice rhizosphere-xylem hydraulic responses to changes in soil moisture during vegetative growth in rice. To conduct these studies, a global panel of 200 *tropical japonica* rice accessions adapted to the Philippines and Arkansas, USA growing seasons will be screened at IRRI under different soil moisture conditions in a rainout shelter and under flooded conditions (see photos). A selected set of 32 accessions will be evaluated at Stuttgart, AR under alternate wetting and drying (AWD), IRRI with varied soil moisture conditions and in-depth drought measurements, and Purdue University in the high throughput phenotyping facility. Ultimately, this data will be used apply a process-based modeling framework to determine the genotype-specific responses of these physiological traits to changes in soil moisture and gain a better understanding of genotype by environment interactions and the implications for climate change.



Drought treatment in rainout shelter



Well-watered control treatment

Drs. Jeremy Edwards (mentor) and Yulin Jia (co-mentor) are awarded with a Postdoctoral Fellow by the artificial intelligence center of excellence (AI-COE) fellows program of

USDA. The title of the proposal is ‘An AI approach for discovering novel blast disease resistance sources in rice’.

- **Education and Outreach**

On February 4, Dr. Yulin Jia attended a brainstorming virtual meeting with faculty members of University of Arkansas, Rice Research and Extension Center, Stuttgart, UA- Pine Bluff, and ARS- Delta Water Management Research Unit, Arkansas State University, Jonesboro. The discussion was focused on ideas to provide STEM students with hands-on experience in agricultural research that address a range of issues from rice physiology, genetics to irrigation and/or climate change.

On February 18, Dr. Trevis Huggins virtually participated in the Former Lions In Research and Technology (FLIRT) symposium. Dr. Huggins spoke with undergraduate students in the Natural Science department about careers in plant science. He also shared his experiences as a graduate student and spoke about study habits, and life habits that are essential to be a successful graduate student.

Jacqueline (Jackie) Hughes (Office Automation Clerk) joined the Dale Bumpers National Rice Research Center in 2004 as a custodian. Prior to joining the USDA, Jackie worked at Taco Bell in Stuttgart, AR as a Shift Manager for seven years. Jackie grew up on a small farm and often rode on the combine with her stepdad and watched the farmers plant and harvest their crops but had no idea how fascinating the research side of rice could be. While working at DBNRRC Jackie also completed college courses to further her education. While being a wife, mother and working full time Jackie earned her associate degree in Administrative Support at the Phillips Community College of the University of Arkansas and went on to earn her bachelor’s degree in Technical Management at the University of DeVry. In 2015 Jackie started her current position at DBNRRC and has been involved in a wide variety of duties/activities at the Center. Throughout her 18 years at DBNRRC, she has helped to organize and run many programs such as the Asian, Hispanic, & Black History months and Women Equality Day. Jackie is a member of the Stuttgart Council for Employee Engagement, Diversity, Inclusion and Outreach. Jackie is active in her church and her community. During her free time, she enjoys spending time with family, cooking, crafting, and reading.



See the web version of all DBNRRC research highlights at: <https://www.ars.usda.gov/southeast-area/stuttgart-ar/dale-bumpers-national-rice-research-center/docs/monthly-research-highlights/>