



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



**JULY 2024**

**MONTHLY RESEARCH HIGHLIGHTS**

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

On July 9, 2024, Dr. Camila Nicolli, extension plant pathologist and assistant professor for the University of Arkansas Division of Agriculture, organized Rice Disease Training workshop. More than 40 professionals, including farmers, extensionists, and industry representatives, attended the event. Dr. Rodrigo Pedrozo, an ORISE postdoc plant pathologist at the USDA-ARS Dale Bumpers National Rice Research Center, contributed his expertise at the workshop, presenting his section on “Tips and Tricks for Identification of Rice Diseases in the Field.” Besides Dr. Nicolli and Dr. Pedrozo, Dr. Terry Spurlock (University of Arkansas) and Dr. Felipe Dalla Lana from Louisiana State University (LSU) also presented at the event.



July 15-17, 2024, Data collection campaign for AFRI Plant Breeding Partnership grant (Purdue Univ., DBNRRC, IRRI)

As part of the “Plant Breeding Partnership: Modeling genetic variation of rice hydraulic response to changes in soil moisture” grant funded by AFRI, Diane Wang (PI), graduate students To-Chia Ting, Sam Schafer and Suzu Bogati, and undergraduate student Manasvi Lingampally, all from Purdue University participated in the “data collection campaign” at the DBNRRC. Physiological data was collected on 36 tropical japonica rice accessions. These readings will be used to “ground truth” the physiological data being collected on the same accessions in the Ag Alumni Seed Phenotyping Facility (AAPF) at Purdue University which Dr. Georgia Eizenga (co-PI) recently visited. Also, Dr. Amelia Henry (co-PI) is collecting physiological data from 32 of the 36 accessions being grown at the International Rice Research Institute (IRRI) in the Philippines to further “ground truth” the AAPF measurements. These data will be collectively used to develop a physiological model for exploring genotype by environment interaction.



Measuring pre-dawn leaf water potential.



Photosynthesis at mid-day.



Examining the *Oryza australiæsis* accessions in the DBNRRC greenhouse.



Georgia observing the operation of the AAPF from the inside, which can even accommodate maize plants!

**Dr. Jai Rohila**, Research Agronomist at the Dale Bumpers National Rice Research Center was part of the ARS team to visit National Agriculture and Food Research Organization (NARO), Japan from Dr. Rohila accompanied Dr. Sarah Beebout, National Program Leader for Sustainable Intensification; Dr. Michele Reba, Lead Scientist at the Delta Water Management Research Unit (DWMR), Jonesboro, AR; and Mr. Derek Thor Cary, International Affairs Specialist. Dr. Noriko Yamaguchi at NARO was the host of the ARS team. The ARS team visited NARO field sites in Miyagi and Niigata Prefectures and the Tsukuba research plots to gain first-hand experience of rice production system in Japan and visit ongoing collaborative research plots. The ARS and NARO team members had lengthy discussion meetings and presentations at NARO, Tsukuba for two days and shared the experimental results with each other. At NARO, the ARS team presented four presentations. Dr. Rohila delivered his invited talk “Towards increasing water use efficiency, grain quality, and decreasing methane emissions in rice” and shared the results of ongoing US-Japan collaborative project at the DBNRRC led by Dr. Yulin Jia along with Dr. Shannon Pinson, Dr. Jai Rohila; DWMR, Jonesboro (Dr. Arlene Adviento-Borbe, Dr. Michele Reba), and Genomics and Bioinformatics Research unit, Gainesville, FL (Dr. Adam Rivers). The ARS team on this trip also visited Advanced Lab Analysis

Center at NARO, Tsukuba led by Dr. Koji Baba, Tsukuba Agriculture Research Hall and a state-of-the-art Rice Mill at Ishinomaki, Japan.

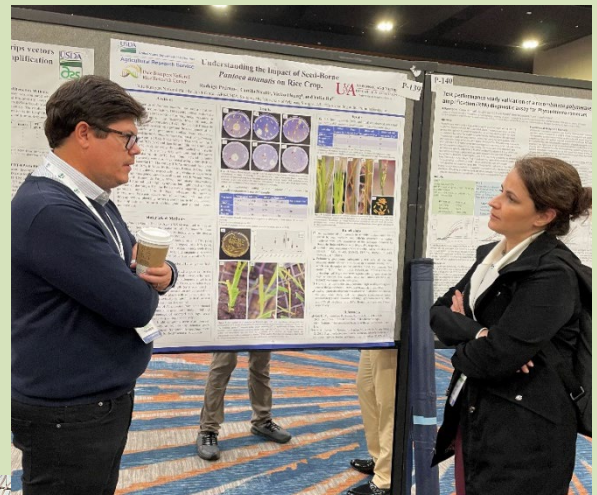
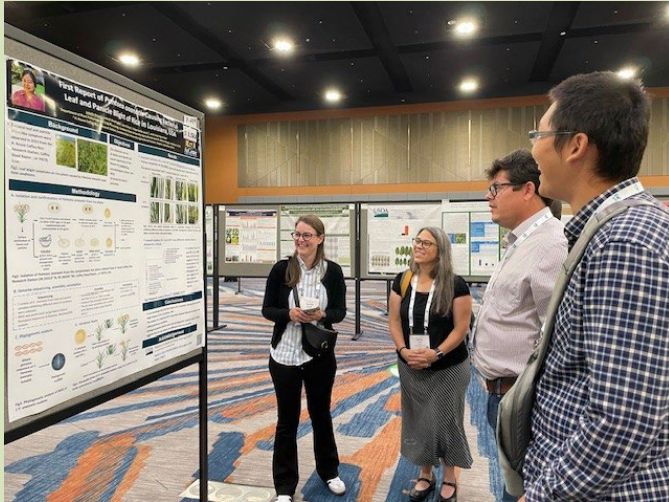


ARS delegation team at NARO rice research field in Niigata, Japan.



ARS delegation team at a Rice Mill in Ishinomaki, Japan during the visit.

July 27-30, 2024, Dr. Yulin Jia with 4 Postdoc Research Associates, Drs. Li Wang, Rodrigo Pedrozo, Aron Osakina, and Yixiao Huang attended and presented at 2024 Plant Health meeting at Memphis, TN. Dr. Wang co-moderated a technical session and presented a talk titled ‘Unraveling the genetic diversity of *Magnaporthe oryzae* through a graph pangenome approach’. Dr. Pedrozo presented two posters, ‘Understanding the Impact of Seed-Borne *Pantoea ananatis* on Rice Crop’ and ‘Genomic Insights for Enhanced Sheath Blight Resistance in Rice (*Oryza sativa* L.)’, Dr. Osakina presented a poster titled ‘Identification of a Major Rice Blast Quantitative Trait Loci containing *Pita/Pi39(t)/Ptr* in US Black Hull Awn Weedy Rice’, and Dr. Huang presented a poster titled ‘Regional Diversity of *Magnaporthe oryzae* in the Southern USA from 2017 to 2022’. Nearly 1,100 scientists from diverse backgrounds at the forefront of advancing plant health from diagnostics to groundbreaking research gathered to shape the future of plant health. This meeting is a hub for cutting-edge research presentations, expert speaker sessions, and unparalleled opportunities to exchange ideas. Plant Health 2024 offered networking events, over 700 technical abstracts, engaging hot topic roundtables, hands-on workshops, and more than 60 invited speakers.



From left to right: Aron Osakina, Li Wang, Emily Luna (Colorado State University), Yulin Jia, Rodrigo Pedrozo, Camila Nicolli (University of Arkansas), and Yixiao Huang.

On July 31, 2024, **Drs. Yulin Jia, Jeremy Edwards, Trevis Huggins, Jai Rohila, Shannon Pinson, and Rodrigo Pedrozo** with **Ms. Melissa Jia** and **Mr. Aaron Jackson**, hosted a facility tour for 42 visitors from Argentina. These visitors represented all facets of the Argentina Rice Industry, including several scientific researchers as well as producers, millers, and marketers. Dr. Jia presented slides showing an overview of US rice and research at the DB NRRC, before the group was divided into three parts for a facility tour. With several researchers from Argentina serving as interpreters, Dr. Huggins presented the importance of the National Small Grains Collection and the Genetic Stocks – Oryza (GSOR) to rice improvement and research, Dr. Edwards presented how genome sequences and molecular markers are used to mine diverse rice collections to discover useful genes and deploy marker-linked traits in breeding, Dr. Rohila presented his Climate Smart rice production research, Dr. Pedrozo presented an overview of rice pathology research, and Dr. Pinson presented an overview of rice grain quality research at the DB NRRC.



✓ **Rice Germplasm Distributed**

During the month of July, 5 rice genetic stocks were shipped to researchers in Germany and the United States.

● **Stakeholder Interactions**

On July 18, 2024, **Dr. Shannon Pinson** met virtually with Mr. Todd Silver, USDA-ARS Branch Chief of External Communications, to provide information on the nutritional and economic value of rice varieties with colored brans (red or purple/black) to consumers and the US rice industry, and on the long-term development by scientists at the DB NRRC of rice varieties having health-beneficial pigmented compounds in their brans with colored brans. The provided information will be used by Mr. Silver to develop a *Science in Your Shopping Cart* PodCast targeted for release in Spring 2025.

- **Education and Outreach**

**John Mitchell**, currently a Biological Science Technician on a USDA NIFA funded project in Dr. Jai Rohila lab successfully defended his graduate thesis titled “Discovery of alleles and traits for enhancement of plant biomass within the ecogeographically and genetically diverse *Aus* subpopulation of rice (*Oryza sativa* L.) at the University of Arkansas at Pine Bluff (UAPB) under Dr. Sathish Ponniah as major advisor. John initiated this work as an undergraduate intern. Fascinated by the rice research John was motivated to enroll in graduate school and, for his thesis research, John decided to explore rice genetic diversity to discover genes and traits that may improve drought stress tolerance and sustainability of rice production. He conducted his research work at the DBNRRC under the supervision of Drs. Jeremy Edwards and Jai Rohila, with assistance from multiple DBNRRC scientists and staff members John Mitchell is a native of Fordyce, Arkansas, and graduated with a MS degree in Agricultural Regulations.

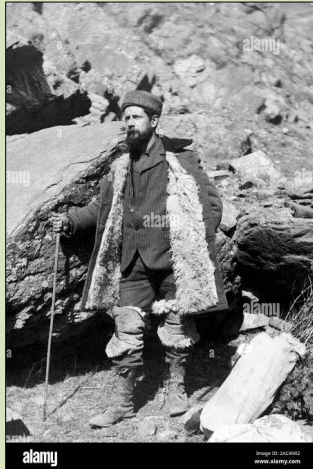


From left to right: Jai Rohila, Yulin Jia, Sathish Ponniah, Melissa Jia, Jeremy Edwards, John Mitchell, Trevis Huggins, Laduska Sells, Tiffany Sookaserm, and Jontesha Burnett.

### **Frank N. Meyer Medal for Plant Genetic Resources**

The 2024 Frank N. Meyer Medal for Plant Genetic Resources will be awarded to **Dr. Georgia Eizenga** at the Crop Science Society of America meeting being held November 10-13, 2024, in San Antonio, TX. Georgia’s career has focused on exploring underutilized genetic resources to demonstrate their crop improvement value, including characterization of wheat and rice wild species, interspecific hybridization in forage grasses, and creating a panel of global rice accessions with diverse ecological adaptation. She developed 37 novel mutants (13 tall fescue monosomics, 24 rice trisomics), six rice chromosome segment substitution line (CSSL) populations, the Rice Diversity Panel 1 (RDP1), two mapping populations, and six germplasm lines for use in breeding. All of

these were added to the USDA National Plant Germplasm System with the rice genetic stocks being part of GSOR. The Frank N. Meyer Medal for Plant Genetic Resources is a tribute to Frank N. Meyer who served for 13 years as an Agricultural Explorer of the Office of Foreign Seed and Plant Introduction and lost his life in the waters of the Yangtze River. It is presented in recognition of his contributions to the plant germplasm collection and use in the U.S., and his dedication and service to humanity through collecting, evaluating, or conserving earth's genetic resources. For more information: Coyne et al. (2023) CSA News doi: 10.1002/csan.21020.



Frank N. Meyer (1875-1918)  
Dutch-US Plant Explorer



Obverse and reverse sides of the medal. (CSA News;  
doi: 10.1002/csan.21020)

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/>