



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



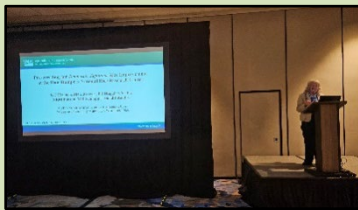
JUNE 2024

MONTHLY RESEARCH HIGHLIGHTS

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- **Technology Transfer**
 - ✓ **Interactions with the Research Community**

From June 5 to 8, 2024, **Dr. Georgia Eizenga** attended the 2024 International Temperate Rice Conference held in New Orleans, LA. She gave the presentation titled “Pre-breeding for Temperate Japonica Rice Improvement at the Dale Bumpers National Rice Research Center (DBNRRC)”, an overview of research at the DBNRRC focused on medium grain rice, which is usually classified as temperate japonica in the USA. During the conference, over 100 oral presentations and about 60 poster presentations were delivered to over 250 registered attendees representing all major temperate rice growing regions of the world. The final day included a tour of two Southwest Louisiana farms which produced both rice and crawfish as part of a two-year rotational management system.



Dr. Eizenga giving her presentation. Crawfish in rice paddy and harvesting crawfish from traps in the ratooned rice crop. (Images from the Louisiana Crawfish Production Manual, LSU Ag Center.)

The first project meeting for the NIFA-AFRI PLANT BREEDING PARTNERSHIP: Modeling genetic variation of rice hydraulic response to changes in soil moisture, was held at the International Rice Research Institute (IRRI) in the Philippines, June 18-19, 2024. The meeting began with Dr. Hans Bhardwaj, Rice Breeding Innovations Dept. Head welcoming the group to IRRI. The group included in-person attendees, Drs. Diane Wang (PI, Purdue Univ.), Amelia Henry (co-PI, IRRI) and **Georgia Eizenga** (co-PI, DBNRRC) and Purdue Univ. graduate students, Sam Schafer and To-Chia supported by the grant. All participants made presentations detailing the research part of the research project they were responsible for. Dr. Eizenga presented “Updates from Dale Bumpers National Rice Research Center and how this project relates to other projects/priorities the DBNRRC”. Virtual presentations related to data management tools and modeling were

made by Purdue students, Luis Vargas and Sajad Jamshidi, respectively. Also, Dr. Tao Li, IRRI scientist, discussed the *Oryza* model for which he was the major developer.

As part of the meeting, the group toured the recently opened plant growth facility being utilized by the rice breeders for speed breeding. The group also toured the IRRI Genebank and was impressed by the level of automation used to manage the accessions in the genebank. Lastly, the group visited the rain-out shelters where Dr. Henry oversaw the grow-out of the 200 *tropical japonica* (TRJ) accessions in the GWAS panel and the selected panel of 32 TRJ accessions under drought.



Left to right: Drs. Diane Wang, Amelia Henry and Georgia Eizenga, and graduate students Sam Schafer and To-Chia. attending the NIFA-AFRI project meeting at IRRI and touring the IRRI rice genebank

Seeds of several *Oryza* species were on display.

On June 20, 2024, **Dr. Georgia Eizenga** presented the invited seminar “Mining *Oryza* Diversity for Rice Improvement” as part of the monthly Rice Breeding Innovations Science Seminar Series at the International Rice Research Institute in the Philippines. The seminar was delivered to a broad audience which ranged from undergraduate students to IRRI scientists and post-docs who attended either in-person and virtually. Dr. Eizenga received a “Certificate of Appreciation” for presenting in the seminar series.



Dr. Eizenga presenting her seminar and receiving a Certificate of Appreciation from Dr. Henry

From June 25-27, 2024, SEA Agreements training, arranged by Carlean Horton, SEA Section Head for Financial Management, Travel and Agreements, was held at the Stuttgart location. It was a hybrid meeting with presentations by many from Carlean's team, along with other experts from the field. Presenters attending in person were Kristy Wallace, Grants Management Specialist, Tarquisha Mumford, Extramural Agreements Specialist and Carol Morris, Technology Transfer Assistant. The attendees included employees from all ARS locations in Arkansas as well as online attendees from Florence, SC, Poplarville, MS and Houston, TX. The Stuttgart Location team was happy to highlight and share research activities at both the Dale Bumpers National Rice Research Center and the Stuttgart National Aquaculture Research Center during the facility tours. We appreciate the assistance and knowledge these SEA Agreements experts shared with us and are grateful to the Southeast Area Office leadership team for supporting their visit.



Scientists and agreement specialists toured research conducted by DB NRRC.

✓ **Rice Germplasm Distributed**

During the month of June, 1 rice genetic stocks were shipped to researchers in the United States.

- **Stakeholder Interactions**

On June 6, 2024, **Dr. Shannon Pinson** shared information by email about determining and preserving rice milling quality with David Cummings, Vivian Maduekeh, and Staci Seibold, with Partners in Food Solutions. Partners in Food Solutions (PFS) is a non-profit organization working to strengthen food security, improve nutrition and increase economic development across Africa by expanding and increasing the competitiveness of the food processing sector. They provide information and mentoring to promising entrepreneurs in twelve African countries to improve the quality and quantity of food available in those areas and required information on rice milling quality to help reduce waste from kernel breakage at a rice mill in Africa. They reached out to Dr. Pinson with questions about rice milling after having met Mr. Jace Everette when he participated in the May 22 & 23 Rice Quality and Evaluation Short Course.

On June 7, 2024, **Dr. Yulin Jia** and **Ms. Melissa Jia** met with historians Kelly D. Smith, Fletcher Smith, Shehong Chen, and Wei Zhou, that were retirees from the University of Massachusetts-Lowell. Dr. Jia discussed the history of US and Arkansas Rice. He then discussed the research performed at DBNRRC. Ms. Jia led them on a tour of the facilities including the Genomics Lab, Plant Pathology Lab, Germplasm Lab, Cereal Chemistry Lab, and the greenhouses. The historians enjoyed the visit and were fascinated by the history of rice, our current research program, and our facilities.



From June 10-13, **Dr. Yulin Jia** attended and gave an invited talk titled ‘Using major resistance genes to manage rice blast disease in the USA’ at the 9th International Rice and Wheat Blast Conference in Panama City, Panama. Blast conference takes place once in 3-5 years around the globe when scientific advances in managing rice and wheat blast diseases are presented.



On June 26, 2024, **Drs. Yulin Jia and Shannon Pinson**, along with **Ms. Melissa Jia** and **Mr. Aaron Jackson**, hosted a facility tour for 16 members of the Arkansas Rice Research and Promotion Board. This board’s membership comprises rice producers, millers, and merchants operating in Arkansas. Their activities are funded through a self-tax system in which buyers and producers are each assessed 1.35 cents per bushel of rough (unmilled) rice bought/sold in Arkansas. The Arkansas Rice Research and Promotion Board is responsible for determining the annual disbursement of these funds. The assessments paid by buyers are used for market development and promotion programs, while the assessments paid by producers must be used for rice extension and research.

Dr. Yulin Jia showed University of Arkansas faculty members and Rice Research and Promotion Board members rice- fish research conducted by DB NRRC and Harry K. Dupree Stuttgart National Aquaculture Research Center (SNARC) in Stuttgart, Arkansas. The objective is to develop a new production system where rice yield can be enhanced with wastes from fish and fish can eliminate weeds, soil microbes and insects to reduce negative impact of greenhouse gases.



Picture shows that koi carp at 200-400 gram each was released in rice paddy.

- **Education and Outreach**

Olivia Duncan is an intern here at Dale Bumpers National Rice Research Center. She attends the University of Arkansas at Pine Bluff where she is pursuing a degree in Agriculture Agronomy.

She grew up in a small town called Marianna, AR and was raised as an only child. With little to do in the community, and no siblings to do anything with, at a young age she embraced a love for the outdoors and nature. Some of her interest in agriculture was obtained from her upbringing and inherited from her relatives. As far back as she can remember her mother would grow a garden in the backyard every year. She would plant any and everything from squash, cucumber, watermelon, cantaloupe, peas, greens, cabbage, corn, etc. Around the age of 11 she started helping her mother in the garden, and that became a regular activity for

Olivia until she graduated high school. While helping her mother in the garden she would tell her stories, how her grandmother grew a garden every year as well. Olivia's mother and her siblings would pick peas and watermelon or till her grandmother's garden by hand as punishment when they were growing up. Olivia would also get to hear the stories about her great aunt winning the local garden competition several years in a row. Her great aunt's only competition was her grandmother. She also was influenced by her uncle who was a very active farmer. He grew several acres of corn and raised hogs. In Olivia's teen years, every summer her uncle would hire her to help him part-time on his hog farm. She oversaw slopping the hogs twice a day and catching the hogs that got loose, which was often since her uncle never had the fence patched (She believes he was trying to keep her busy). From time to time when he was free, he would give her tractor training in his field. With the skills gained from her relatives related to gardening and agriculture she hopes to broaden her horizons, by also gaining knowledge here at DBNRRC and UAPB to go along with those concepts to make dreams come true and one day be a plant breeder and have her own plant patent. After graduating from the University of Arkansas at Pine Bluff, she plans to go back to UAPB to obtain her master's degree in Agricultural Regulations.



On June 18, 2024, Lily Lofton, a USDA Pathway doctoral student with University of Georgia visited DB NRRC and gave a seminar titled 'Pyrocidine, a molecular off switch for fumonisin biosynthesis', how does it work' to staff members of USDA DB NRRC and University of Arkansas Rice Research and Extension Center (UA RREC) and University of Arkansas Pine Bluff (UAPB). Subsequently, Lily visited scientists and toured UA RREC, DB NRRC, Harry K. Dupree Stuttgart National Aquaculture Research Center (SNARC) and UAPB and field experiments in Arkansas.



- **International Research Collaborations**

On June 3, 2024, **Drs. Yulin Jia, Trevis Huggins and Jeremy Ewards** virtually met Dr. Alberto San Bautista Primo, a researcher/professor from Polytechnic University of Valencia, Spain. They discussed potential collaborative research to control diseases and enhance rice quality, yield, and stress tolerance.

On June 3, 2024, a large delegation of scientists from Australia visited DB NRRC. Mr. Graeme Kruger, Executive Director of the Australian Rice Growers Association and Nicole Griffin, the Head of Agribusiness for SunRice presented an update of rice industry and rice research in Australia.



New Research Grants

Arkansas Rice Research and Promotion Board (ARRPB): **Drs. Yulin Jia and Rodrigo Pedrozo** (ARS ORISE Postdoc) with Dr. Camila P. Nicoli, Extension Plant Pathology, University of Arkansas System Division of Agriculture, Rice Research & Extension Center for the project ‘Revising the Prevalence and Stability of host resistance of Rice Blast Races in Arkansas’ with \$97,156, year 1 of 3. The goal of the project is to survey rice blast disease in different rice growing regions in the state of Arkansas for the existence of pathogen avirulence genes to guide the deployment of blast resistance genes by rice breeders. This project represents a collaboration between the University of Arkansas (UA) rice breeding and crop protection program and Dale Bumpers National Research Center (DB NRRC), integrating DNA technologies with traditional plant pathology methods.

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/>