



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



JULY 2019

MONTHLY RESEARCH HIGHLIGHTS

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Technology Transfer

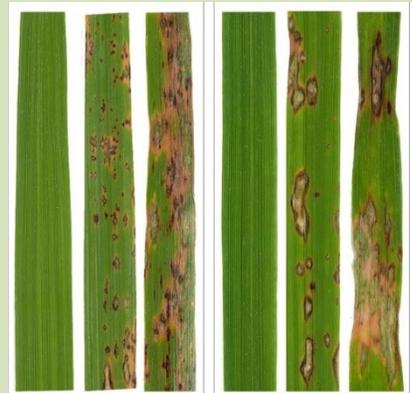
✓ **Interactions with the Research Community**

On June 20-24, 2019, Dr. Fernandez-Baca, HQ funded post-doc with Dr. Jinyoung Barnaby, attended the American Society for Microbiology (ASM) Microbe held in San Francisco, California, and presented a poster entitled “Rice soil microbiome interactions with plant growth characteristics and methane emissions.” The annual conference is one of the largest microbiology meetings with locations rotating through different U.S. cities.



On July 16, 2019, Dr. Joshua Cobb visited the DBNRRC and presented a seminar “The Evolution of a Revolution: Retrospective analysis of irrigated rice breeding at IRRI since the Green Revolution provides a foundation for increased genetic gain.” Dr. Cobb is global lead for the Favorable Environments Breeding Program at the International Rice Research Center (IRRI) in Los Banos, the Philippines.

On July 26, 2019, Dr. Yulin Jia sent 30 rice blast strains to a researcher at Louisiana State University (LSU) for testing in controlled laboratory conditions against rice breeding lines and new varieties developed by LSU. These strains will be used for the deployment of effective blast resistance genes and verification of blast resistance genes during and before new variety release. They were selected to represent the virulence and genetic diversity of the rice blast pathogen in the USA from a collection consisting of 1022 isolates collected from 1969 to 2015. The isolates from 1969 to 2009 was collected by the former ARS pathologist, Dr. Toni Marchetti (Beaumont, Texas), the former pathologist of University of Arkansas Rice Research and Extension, Stuttgart,



Arkansas and many other pathologists in the USA. Establishment and characterization of this fungal collection supported in part by Agriculture and Food Research Initiative Competitive grant “Blast Integrated Project” in collaboration with Kansas Agricultural Experiment Station.

On July 30, 2019, Dr. Jinyoung Barnaby gave a lab and facility tour to five scientists from the National Agricultural Products Quality Management Service (NAPQMS), Rural Development Administration (RDA), South Korea, and talked about her research projects on arsenic uptake in rice as well as impact of CO₂ and water management practice on yield and grain quality. Additionally, Dr. Fernandez-Baca, HQ funded post-doc, showed her greenhouse experiments on plant-soil-microbial interactions as they impact grain arsenic uptake.



✓ Rice Germplasm Distributed

During the month of July, 431 rice accessions from the Genetics Stocks *Oryza* (GSOR) collection were distributed to researchers in the United States and United Kingdom.

● **Education and Outreach**

On July 11th and 25th, 2019, a total of 23 girls from 6th through 8th grades were part of a hands-on event at the Dale Bumpers National Rice Research Center. The girls were participating in the Arkansas Museum of Discovery Girls in STEM (Science, Technology, Engineering, and Mathematics) program. The students were introduced to different grain characteristics from rice varieties grown around the world, they learned how to identify and count fungal spores under microscopes, they performed dehulling, milling and chemical analysis of starch content of rice grain, extracted DNA from plant tissue, and learned about how coding is used in bioinformatics and data curation.



On July 24, 2019, two undergraduate students, Ms. Melisa Feng and Ms. Juanita Carballeira, and one high school student, Ms. Tristan Johnson, under the mentorship of Dr. Jinyoung Barnaby (DBNRRC), presented posters at the “Future of Agriculture: Next Generation Symposium”, held at the USDA in Washington D.C. (1): Ms. Melisa Feng; (2): Ms. Juanita Carballeira; (3): Ms. Tristan Johnson; (4) (L-R) Dr. Jinyoung Barnaby, Mr. Eric Kim, Ms. Tristan Johnson, Juanita Carballeira, Melisa Feng at the symposium.



Dr. Jinyoung Barnaby supervised five interns (3 high school students, Ms. Tristan Johnson and Mr. Joshua Lewis from Oxon hill High School, and Mr. Eric Kim from Centennial High School, and 2 undergraduate students, Juanita Carballeira from University of Puerto Rico at Rio Piedras, and Ms. Melisa Feng from Pontifical Catholic University of Puerto Rico) during this year and the students completed their internships this month. They have worked on research projects including genetic variation in heat-induced chalk formation and grain inorganic arsenic accumulation, genotype (G) x environment (E) impact on yield and grain quality in rice. (Picture above) Jinyoung Barnaby, Tristan Johnson, Cristina Fernandez-Baca, Joshua Lewis, Eric Kim, Darryl Baxam, Juanita Carballeira, Melisa Feng and Martha Tomecek.



On July 30th, some 35 participants in the Farm Bureau Southern Region Legislative Conference visited the DBNRRC as part of their tour of the Arkansas rice producing area. Representatives came from several states in the mid-south and southeastern part of the USA. Dr. Anna McClung presented an overview of production and marketing concerns confronting the US rice industry and how DBNRRC staff are addressing these issues through research in improving yield, quality, and sustainability of rice production.