July 2015
Highlights from the Dale Bumpers National Rice Research Center
Stuttgart, AR

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1. Recently accepted Publications

ARS Anticipated Product: Rice varieties with improved disease resistance as a result of introgression from progenitor species

Georgia C. Eizenga, Melissa H. Jia, Shannon R. Pinson, Elie R. Gasore and Bishwajit Prasad 2015. Exploring sheath blight quantitative trait loci in a Lemont/*O. meridionalis* advanced backcross population. Molecular Breeding 35:140 (DOI 10.1007/s11032-015-0332-3)

Sheath blight is one of the most prevalent fungal diseases of cultivated rice and causes significant economic damage to rice production worldwide. No source of complete resistance to sheath blight disease has been identified in cultivated rice (*Oryza sativa*). The wild *Oryza* species, which are closely related to cultivated rice, are a potential source of important traits including new resistance genes to fight pests like sheath blight disease. *O. meridionalis* is the wild Oryza species endemic to Australia and can be successfully crossed with cultivated rice. The objective of this research was to identify the chromosomal location(s) of possible sheath blight resistance gene(s) in an *O. meridionalis* accession that previously demonstrated moderate resistance to sheath blight disease in greenhouse studies. In this study, we began the process of identifying these potential resistance genes and transferring them into the popular southern U.S. long grain variety, Lemont, which is very susceptible to sheath blight disease. One major chromosomal region was identified associated with the potential sheath blight resistance gene(s) contributed from the *O. meridionalis* parent. This region was previously identified in cultivated rice but *O. meridionalis* may have a different sheath blight resistance gene because it diverged from cultivated rice early in evolutionary time. Efforts are underway to continue incorporating this sheath blight resistance gene into Lemont and develop adapted, resistant lines available to rice breeders for use in the development of new rice varieties with superior resistance for the U.S. rice industry.

2. New Significant research collaborations

International

USA

3. New awarded grants

Anna McClung is a Co-PI on a $1M, 3 year grant entitled “Sustainable and Profitable Strategies for Integrated Pest Management in Southern Organic Rice” that was awarded by the USDA/NIFA Organic Agriculture Research & Extension Initiative. The regional project includes cooperative research with Texas A&M Agrilife at Beaumont and College Station, University of Arkansas Research and Extension Center, Stuttgart, University of Arkansas at Pine Bluff, along with USDA-ARS.

4. Technology Transfer

a. Formal Events:

To Non-research stakeholders

On July 9 Anna McClung made a presentation at an organic rice workshop held in conjunction with the Texas A&M Agrilife Rice Field day held at Beaumont, TX. Results from a previously funded Southern SARE grant on organic research were presented. The event was attended by about 30 participants.

On July 28-28, DBNRRC hosted a visit by Drs. Carrie Green and Rufus Chaney, ARS, Beltsville. Meetings were held with the Federal Grain Inspection Service, Riceland, and two local farmers to discuss the feasibility and challenges to developing a relatively quick assay for grain inorganic arsenic. A seminar session presented by the two visitors was attended by 53 stakeholders and researchers.

To Research Community

On July 27 Dr. Yulin Jia hosted three graduate students led by Dr. John Rupe (Professor) from Department of Plant Pathology, University of Arkansas for recent accomplishments of ARS plant pathology research as a partial fulfillment of a graduate class. Subsequently Dr. Jia led a walking tour of DB NRRC facility and greenhouses.

On July 31 Dr. Yulin Jia was invited to participate in the NP303 workshop in Pasadena, California in conjunction with 2015 annual meeting of American Phytopathological Society.

b. Informal Contacts:

On July 23, Stuttgart Daily Leader highlighted research accomplishments of Dr. Yulin Jia's project on the identification of new disease resistance genes from weedy rice. These newly identified blast resistance genes can be used to breed for blast resistance in the Southern USA.

c. New MTAs

d. Germplasm Exchanged:

1,891 rice accessions from the Genetics Stocks *Oryza* (GSOR) collection were distributed to researchers in the US and Pakistan.

5. Educational Outreach

6. Awards/Honors

Dr. David Gealy, Facilities Manager and Research Plant Physiologist with the USDA-ARS, Dale Bumpers National Rice Research Center (DBNRRC) received a "Patriotic Employer" award from the Office of the Secretary of Defense, Employer Support of the Guard and Reserve, July 23, 2015. The award acknowledges Gealy for "contributing to national security and protecting liberty and freedom by supporting employee participation in America's National Guard and Reserve Force". Gealy was nominated by Chad Bowie, a member of the maintenance team that he supervises at DBNRRC. Staff Sergeant Chad Bowie works part time for the 288th Operations Support Squadron as a signals analyst for the Arkansas Air National Guard in Ft. Smith, AR.