



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

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**1. Recently Accepted Publications**

ARS Anticipated Product: Plants with superior product quality.

Huang, X.-Y., F. Deng, N. Yamaji, **S.R.M Pinson**, M. Fujii-Kashino, J. Danku, A. Douglas, M.L. Guerinot, D.E Salt, and J.F. Ma. 2016. A heavy metal P-type ATPase OsHMA4 prevents copper accumulation in rice grain. Nature Communications 7:12138. DOI: 10.1038/ncomms12138

As one of the most important staple crops, rice not only provides more than one fifth of daily calories for half of the world's population but is also a major source of mineral nutrients. However, little is known about the genetic basis of accumulation of some nutrients in rice grain such as copper (Cu), an essential element for plants and humans but which is harmful if in excess. Here, we identified a gene that ultimately controls how much copper accumulates in rice grains by coding for a protein that transports copper into root vacuoles, where it is sequestered. This natural gene was discovered in a cross of the US rice variety Lemont and Teqing, a variety from China. The gene from Teqing was found to increase Cu levels above those normally found in Lemont. This transport gene offers breeders the opportunity to increase copper concentrations in the grain to better meet nutritional needs of the people that rice sustains.

**2. New Significant Research Collaborations**

**International**

**USA**

**3. New Awarded Grants**

**4. Technology Transfer**

**a. Formal Events:**

**To Non-research stakeholders**





## **To Research Community**

The Dale Bumpers National Rice Research Center (DBNRRC) hosted the third meeting of the America Sub-Group of the Paddy Rice Research Group (PRRG) of the Global Research Alliance on Agricultural Greenhouse Gases (GRA), on July 13-15, 2016 at Stuttgart, Arkansas. Forty-one people from 10 countries (New Zealand, Canada, Japan, Uruguay, Colombia, Brazil, Argentina, Chile, Spain, and the USA) participated. Oral talks on recent progress to measure, manage, and mitigate greenhouse gas emissions in rice fields in North and South America were presented along with tours of four rice farms. Improved collaborations and economic implementation of best-management irrigation practices such as alternating wetting and drying also were discussed.

### **b. Informal Contacts:**

Drs. Shannon Pinson and Ming-Hsuan Chen of the Dale Bumpers National Rice Research Center in Stuttgart, AR initiated collaboration with Dr. David Shintani, University of Nevada, Reno, NV, providing him with 200 samples of ground rice grain from a global diversity panel to investigate how much natural variation there is in concentration of thiamin (vitamin B1).

On July 14, Drs. Shannon Pinson and Ming-Hsuan Chen of the Dale Bumpers National Rice Research Center, Stuttgart, AR consulted with Dr. Rita Teixeira, product Manager at QvalySense, about rice research needs and priorities relative to mechanized measurement of individual rice kernels for grain shape, fissuring, starch quality, and protein quantity.

On July 15, Dr. Shannon Pinson of the Dale Bumpers National Rice Research Center, Stuttgart, AR consulted with Drs. Ivan Avila and Alfredo Cuevas the Colombian National Rice Federation (FEDEARROZ) as to how arsenic enters rice plants, and how various environmental conditions can thereby impact the amount and chemical form of arsenic accumulated in rice grains.

On July 18, Dr. Anna McClung of the Dale Bumpers National Rice Research Center, Stuttgart, AR was interviewed by a public radio station in Austin, TX regarding naming of rice varieties after Texas rivers and counties. This was a follow up to a story published in the Beaumont Enterprise after the Texas rice field day on July 13 about the names of rice varieties developed by USDA-ARS and Texas A&M at the Beaumont Rice Research Station.

<http://www.beaumontenterprise.com/news/article/Scientists-use-Texas-rivers-for-rice-names-8383049.php>

### **c. New MTAs**





**d. Germplasm Exchanged:**

During July, 136 rice accessions from the Genetics Stocks *Oryza* (GSOR) collection were distributed to researchers in the US, Belgium, Netherlands and Scotland.

**5. Educational Outreach**

On July 13, 2016, Research Geneticist Shannon Pinson of the Dale Bumpers National Rice Research Center in Stuttgart, AR spoke to the Lion's Club in Stuttgart, AR about the importance of agricultural research to the local community and help to sustain world food supply.

During the last week of July, of the Dale Bumpers National Rice Research Center, Stuttgart, AR employees collected and delivered 20 pounds of food, to the Inter-Church Community Ministry (ICCM) Foodbank for Arkansas County, Stuttgart. During the summer months, food bank supplies are in high demand because many children do not have access to school lunch programs.

Dr. Anna McClung, Research Leader of the Dale Bumpers National Rice Research Center in Stuttgart, AR worked with Susan Fugate of the National Agricultural Library (NAL) to evaluate historical breeding books that span the careers of USDA-ARS of Dr. Hank Beachell and Dr. Charlie Bollich. Beachell (World Food Prize Co-recipient) and Bollich (ARS Hall of Fame) were the first two rice breeders at the USDA-ARS Rice Research Unit in Beaumont, TX, their two careers spanning from 1932 to 1991. NAL has decided to digitize the some 600 books and add them to their Special Collections.

**6. Awards/Honors**

