

April 2017

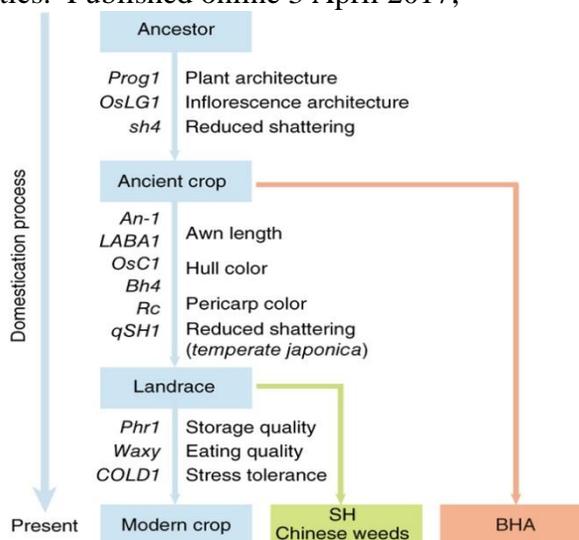
USDA-ARS
Dale Bumpers National Rice Research Center Highlights
Stuttgart, Arkansas

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1. Recently Accepted Publications

Lin-Feng Li, Ya-Ling Li, Yulin Jia, Ana L. Caicedo, and Kenneth M. Olsen. Signatures of adaptation in the weedy rice genome. *Nature Genetics*. Published online 3 April 2017; doi:10.1038/ng.3825.

Weedy rice is a persistent agricultural problem and can lead to the serious reduction of rice production worldwide. Weedy crop relatives are a common and problematic byproduct of domestication. In this study, we analyzed the whole genome of 183 wild, cultivated, and weedy rice accessions. We showed that the origins of two major weedy species of rice – Black hull awned (BHA) weedy rice diverged from its crop ancestor much earlier than those between Straw hull (SH)/ Chinese weeds and their crop ancestor indica. We demonstrated that domesticated rice can change to weedy rice with only a few genetic changes. These findings suggest that parallel evolution created the weedy rice genome that present a unique challenge for weedy rice management worldwide.



ARS Anticipated Products: Plants with superior product quality

Bett-Garber, K.L., Bryant, R.J., Grimm, C.C., **Chen, M.-H.**, Lea, J.M., **McClung, A.M.** 2017. Physicochemical and sensory analysis of USA rice varieties developed for the basmati and jasmine markets. *Cereal Chemistry*, doi:10.1094/CCHEM-09-16-0244-R.

There is a steady demand for imported basmati and jasmine rice in the USA. Rice varieties that can be domestically produced and compete with these imports have been developed from basmati, jasmine and other aromatic germplasm sources. But none have received sufficient acceptance within the US market to completely supplant imported aromatic rice. We evaluated differences among US aromatic varieties and imported basmati and jasmine samples and demonstrated that US aromatic rice cultivars developed for the basmati and jasmine rice markets were more similar for flavor sensory traits to jasmine rice and could be differentiated from the market preferred imported aromatic rices. These findings will guide

the breeding-community in the direction needed for additional improvement in aromatic rice to successfully compete with the imports.

2. Technology Transfer

a. Formal Events:

To Non-research Stakeholders

To Research Community

On April 1, 2017, Dr. Ming-Hsuan Chen provided results of amylose content and RVA analyses for 25 breeding lines to Dr. Maxwell Darko Asante, senior research scientist/rice breeder with Crops Research Institute, Ghana.

On April 7, 2017 Dr. McClung, Edward and Chen consulted with Drs. Maghirang, Brabec and Armstrong with USDA, ARS, Center for Grain and Animal Health Research at Manhattan, KS on grain quality issue of rice from Philippines. Results of gelatinization temperature prediction were provided and currently conducting DNA testing using grain quality markers.

b. Informal Contacts

On April 20, 2017, Quynh Grunden, a technician at DBNRRC, was interviewed by Kim Ward, a student at Phillips Community College-Univ. of Arkansas, regarding greenhouse management and working in a greenhouse. Ms. Ward is interested in greenhouse management and conducted the interview as part of the Student Success course she is currently enrolled in.

On April 26, 2017, Eric Grunden, a technician at DBNRRC, judged the Science Fair at St. John's Lutheran School in Stuttgart, AR.

c. Germplasm Exchanged:

During April, 1,461 rice accessions from the Genetics Stocks *Oryza* (GSOR) collection were distributed to researchers in the US, Belgium, Canada, Egypt, Italy, Pakistan, and the United Kingdom.

3. Education and Outreach

On April 21, 2017, Dr. Yulin Jia attended a 5 hr. video conference of the 5th annual career development program orientation of the Federal Asian Pacific American Council (FAPAC)

held at US Department of the Interior, Washington, D.C. FAPAC is a 501 (c) (3) nonpartisan, nonprofit organization of Asian Pacific American employees in the federal government. Dr. Jia will serve as a mentor for an assigned mentee in 2017. This program is a tuition-free program that offers individual mentoring, professional development, and career counseling for high-performing federal employees.

New Significant Research Collaborations