

SUMMARY

Arkansas Rice Research and Promotion Board - 2004

TITLE: Continued Evaluation of Blast Resistance Genes in Rice Wild Relatives (*Oryza* spp.) and Unique *O. sativa* Accessions Utilizing DNA Markers

INVESTIGATORS: Georgia C. Eizenga, Fleet N. Lee and Yulin Jia

COOPERATOR(S): Wengui Yan, James W. Gibbons, Karen A.K. Moldenhauer and J. Neil Rutger

FUNDING AREA: Genomics

STATUS: ONGOING (Year 1 of 3 year project for 2004-2007)

PROGRESS: A personnel change occurred in this project, Ms. H. Raeann Refeld, Program Technician I, funded on the previous project, resigned in March 2004. The vacant position was advertised beginning April 13 as a Post-Doctoral Associate to better met the needs of the proposed research. Dr. Hesham A. Agrama was selected and began work on Sept. 20, 2004.

Dr. Agrama has done a more complete analysis of the molecular (microsatellite) marker data already collected on 85 of the 94 *O. sativa* accessions having complete data, identifying correlations between 46 of the 125 molecular markers with the blast, sheath blight, heading date and plant height data collected on these accessions. Eleven of the 37 markers correlated to blast resistance traits were not located in regions of known blast resistance genes. Additional markers associated with these eleven regions will be selected to identify possible new/novel blast genes located in these regions.

Inclusion of nine southern long grain and two medium grain cultivars in the analysis of relatedness with DNA markers indicated nine of the 89 *O. sativa* accessions were somewhat closely related to US cultivars whereas the other 76 were more distant. Of the 34 accessions identified in the previous project as a potential source of new/novel blast resistance, twelve accessions were from one source in China. A possible change/shift in blast race isolates was noted in northeastern Arkansas in 2004. Screening of the aforementioned 34 *O. sativa* accessions identified 21 accessions resistant to this new isolate. Six of the 21 accessions were from the one Chinese source, whereas the others were of more diverse origin.

Other progress includes: 1) additional DNA markers used in other labs to identify additional blast genes adapted for use in Stuttgart, 2) DNA isolated from the remaining *O. sativa* accessions and is being genotyped, 3) using DNA markers to select the most 'typical' parents for crosses between six resistant *Oryza* spp. and *O. sativa*, and 4) identifying molecular markers associated with possible new blast resistance genes.

Results of this research were presented at the UA RREC field day on August 11, 2004. Results of the *O. sativa* accessions are being submitted for publication in a scientific journal.