

## Breeding and Evaluation for Improved Rice varieties (Project No. ARK01860)

Karen A.K. Moldenhauer  
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Banks was released to qualified seed growers for the first time in 2004. Its experimental designation was RU0001188. Banks is a high yielding, long-grain line, which has blast resistance to the common races of blast in Arkansas. It is from the LaGrue back crossing program where we have worked closely with the pathology group to get blast resistance into a high yielding line. It yielded 177, 190, 199, 197 and 173 in the ARPT for 2000, 2001, 2002, 2003, and 2004, respectively. These yields compared favorably with Wells at 185, 190, 197, 197, and 174, respectively, for 2000, 2001, 2002, 2003 and 2004 and Francis at 187, 190, 203, 198, and 177 bushels/A, for 2000, 2001, 2002, 2003 and 2004, respectively. Banks is very similar to LaGrue having three doses of LaGrue in its parentage. Banks originated from the cross LaGrue//Lemont/irradiated Bonnet 73 selection/3/LaGrue/4/LaGrue (cross no.19951166), made at the Rice Research and Extension Center, Stuttgart, AR, in 1995. The documentation has been completed for application for a plant utility patent for Banks.

Lines have also been selected which have good yield potential and are early and head in less than 80 days. RU0101093 (seed not for sale) is one of these lines which has blast resistance to the common races in Arkansas and is being considered for release. It originated from a cross involving an extremely early line from Hungary. It has been evaluated for its potential in rice cropping systems as an early line and also for cold tolerance. RU0101093 was grown as foundation seed in 2004 for potential release to seed growers for the 2005 season.

Disease resistance is an important component of the rice breeding program. Work is under way on a backcrossing program in cooperation with the rice pathology group to get blast resistant Francis like material. We are currently also screening material for the *Pita* gene. Collaborative work is underway with Dr Jia at the USDA-ARS DBNRRC to determine the blast resistance genes in Raminad Stain 3, to isolate and clone them and incorporate these genes into the breeding program. Lines have been selected with blast resistance and no photoperiod sensitivity. Currently six of these lines which were grown in the SIT and Preliminary tests this year have resistance to the race of blast which has been virulent on Banks and the *Pita* gene. Tolerance to sheath blight, caused by the organism *Rhizoctonia solani* Kuhn, is also a very important aspect of the breeding program in Arkansas. We are working with Dr. Jia to determine genes involved in the tolerance. In general, lines from the Arkansas breeding program have more tolerance to sheath blight than those from the other southern states.

Seventeen Newpath resistant lines were screened in Arkansas this season, eight of them had been screened last year. Two of these lines were in the ARPT and one was in the Disease Monitoring Plots. This work is being conducted in conjunction with BASF. These lines are crosses of CL161 and Wells. Next year we will have some lines from Francis and other crosses. Dr. Tim Croughan from Louisiana, made the crosses and did the initial Screening work in Louisiana. BASF paid for the yield test that we had at the RREC this year. None of the lines showed any yield advantage over CL161 in the 2004 tests. They will be tested again with the best other lines next year.

Data from the Arkansas Rice Performance Trials (ARPT) conducted in Arkansas (Stuttgart, Colt, Rohwer, Cross County and Jackson County) in 2003, is available in the University of Arkansas Cooperative Extension Service Information Sheet "Arkansas Rice Performance Trials, 2001-2003, and on line at: [www.aragriculture.org/](http://www.aragriculture.org/) The new data including the 2004 year will be available soon. Go to Crops Soils and Water Management; Rice; Performance Trials.