

**Rice Research and Promotion Board**  
**Progress Report for Rice Breeding and Genetics**  
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- A. Develop semi-dwarf long and medium grain rice cultivars: We released two semi-dwarf Rice Cultivars in 2004. “Medark” is a medium grain with an improved disease package and grain quality characteristics compared with Bengal the commonly grown medium grain cultivar. “Cybonnet” is a long grain semi-dwarf with excellent grain quality traits and improved disease package compared to Cocodrie the most popular semi-dwarf grown in Arkansas. Seed producers had both cultivars for multiplication and will sale as registered and certified seed in 2005.
- About 150 crosses have been made this year. Our project is evolving into the use of triple crosses for generation of a high level of variation. Over 500 F1 and F2 populations from over 157 single and triple crosses are planted in Stuttgart this year. Individual plants and bulks will be selected for generation advancement at Puerto Rico in the winter nursery. Twenty of these crosses were specifically targeted for anther culture. About 3200 F4 and F5 rows were planted in 2004. Field selected lines will be tested for quality and pathology in winter and be planted in preliminary yield trials next year. The semi-dwarf Stuttgart Initial Test and the Preliminary Yield Trial had about 380 entries in 2004. Both trials were planted at Stuttgart, Rohwer, Pine Tree Blast nursery, and straighthead evaluation trial. The best yielding lines selected from these experiments will be advanced to the ARPT and URRN for 2005. The Arkansas Rice Performance Trials were conducted at 3 locations by my project in 2004 including 2 farmers’ field locations in Jackson and Clay Counties, and at the Northeast Branch Experiment Station at Keiser.
- B. Broaden genetic base: Indica varieties identified by Dr. F. Lee as highly tolerant to blast and sheath blight were used as parents in the crossing program. Breeding lines derived from these lines are in the F4 and F5 generations this year and have shown good blast disease resistance in the field at Pine Tree. Especially encouraging are medium grain crosses that combine blast tolerance and good grain quality. Another group of medium grain lines show a good level of straighthead tolerance. Future crosses will combine these lines for processing through anther culture. The recent outbreak of a blast isolate capable of overcoming resistance provided by the Pi-ta resistance gene has highlighted this effort in making available sources of resistance to pathogen variation.
- C. Conduct plant breeding studies: Our emphasis has been on evaluating lines for straighthead and cold tolerance. In the long term, both of these traits, combined with other disease and quality traits, should help in maintaining sustainable rice production. A Chinese indica variety introduced by Dr. Rutger appears to be very tolerant to straight head. Long grain F4 and F5 lines from this line were selected in 2003 and were being evaluated for yield and straight head tolerance in 2004. Results from the three-year Cold Tolerance Trial were presented at the Rice Technical Working Group Meeting this year. The second year of a milling yield by cultivar by harvest date study was completed in 2004. Preliminary one-year results were presented at the RTWG this year.
- D. Regional cooperation: The Uniform Regional Rice Nursery was conducted at Stuttgart in 2004.
- E. Maintain high quality and pure head row and breeder seed. Breeder head rows of 1 medium grain and 1 long grain were planted in 2004.