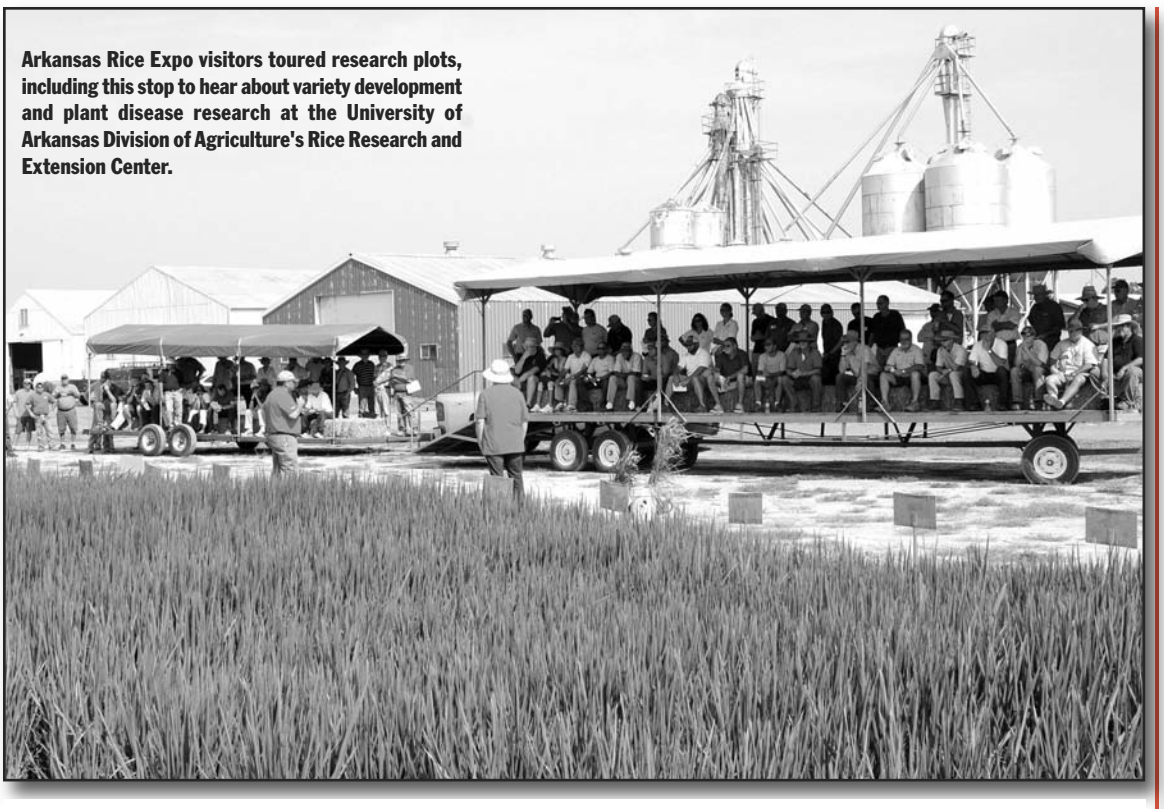

Arkansas Rice Expo visitors toured research plots, including this stop to hear about variety development and plant disease research at the University of Arkansas Division of Agriculture's Rice Research and Extension Center.

# Nitrogen Test, Varieties, Diseases, Weeds Highlight Arkansas Rice Expo Tour

**STUTTGART, ARK.**

A major advance in soil testing for nitrogen fertility, a possible future rice variety and research on managing weeds and diseases were presented in a field tour of research projects at the Arkansas Rice Expo Aug. 1 at the University of Arkansas Division of Agriculture's Rice Research and Extension Center near here.

More than 1,000 visitors attended the field day, which began with a meeting of Arkansas legislators on the house and senate committees on agriculture, natural resources and economic development. Cooperative Extension Service staff members provided displays and demonstrations on cooking, landscaping, 4-H activities, healthy lifestyles and other topics.

Keynote speaker Rep. Rick Crawford, First District congressman from Jonesboro, said research at the center helps Arkansas farmers increase yields and profitability, "and ultimately the consumer benefits in terms of being able to pay lower prices at the grocery store."

Chuck Wilson, interim director of the center, said 11 resident faculty members and about 25 other Division of Agriculture scientists conduct research at the center. They often collaborate with scientists at the nearby USDA Dale Bumpers National Rice Research Center, he said.

Wilson said research is supported by Arkansas farmers through check-off programs for rice, soybeans, corn and grain sorghum.

"We were very pleased about the number of people who came out to see our research and learn about what we do and how we can be a resource for all Arkansans," Wilson said. Videos of some field day presentations are available at http://www.youtube. com/ arextension.

Trent Roberts, research assistant professor of crop, soil and environmental sciences based in Fayetteville, said up to 5,000 soil samples will be processed in the first year of the Nitrogen Soil Test for Rice. The test, called NST*R, is the first to provide site-specific recommendations for nitrogen fertilizer in rice.

Expansion of the capability to analyze more soil samples will be based on the level of interest by producers, Roberts said. County extension agents will provide details on soil sampling, which can begin in the fall. The current test is only for rice on silt loam soils. Protocols are being developed for rice on clay soils and wheat on silt-loam soils, Roberts said.

Current nitrogen fertilizer recommendations are based on how rice varieties typically respond to nitrogen rates applied on a particular soil type. This often results in too little nitrogen for optimum yield or too much, Roberts said. Too much nitrogen not only wastes money but also can make plants more susceptible to disease and leave nitrogen in water that drains from the field, he said.

Field trials of NST*R in farmers' fields have verified that the site-specific nitrogen rates recommended provide optimum yields and that they frequently vary significantly from the rates a farmer would have otherwise applied, Roberts said.

Richard Norman, professor of soil fertility, who has worked on the project for some 20 years, said nitrogen exists in many organic forms in a constant state of change in the soil. The amount actually available to plants has been hard to pin down.

Norman credits Roberts, who was his graduate student, with helping to solve the chemistry puzzle by identifying measurable soil nitrogen fractions that reliably predict the amount of soil nitrogen available to plants.

Karen Moldenhauer, who directs the Division of Agriculture's rice breeding program, said a very promising long-grain rice breeding line is about two years from possible release as a new variety. So far, breeding line 142-AR has produced very high yields and matures a week earlier than current high-yielding varieties.

The breeding line appears to have a high level of resistance to bacterial panicle blight, which was a major disease problem in 2010 and may be again in 2011. "We are very excited about that," Moldenhauer said.

Yeshi Wamishe, a new assistant professor of plant pathology based at the rice center, said her first priority is identifying sources of genetic resistance to bacterial panicle blight.

"This bacteria thrives in heat," Wamishe said. The disease is likely to occur at an "epidemic" level again this year if excessive heat conditions persist, said Richard Cartwright, former extension plant pathologist and now associate director for agriculture and natural resources in the Cooperative Extension Service.

Genetic resistance is the best way to manage this and other bacterial plant diseases, Wamishe said. She said her research is focused on identifying "durable" resistance through a combination of genes that can be bred into future varieties.

Bob Scott, a weed scientist based at the Lonoke Extension and Research Center, said a comprehensive rotation study is underway to help producers avoid creating herbicide-resistant populations of the red rice weed.

Clearfield rice plants are resistant to Newpath herbicide, which kills red rice and other weeds. Clearfield varieties are currently planted on 60 to 70 of the Arkansas acreage, Scott said.

"We do see a build-up of red rice in continuous Clearfield plots," Scott said, which means red rice weeds develop resistance to Newpath herbicide when exposed to it year after year.

Red rice infestation is 80 to 90 percent lower in test plots where Clearfield rice is rotated with either Liberty Link or Roundup Ready soybeans and in plots left fallow for a year and treated to prevent red rice germination, Scott said. Δ