



Some of the 175 scientists who attended the Fifth International Rice Blast Conference, hosted by the University of Arkansas Division of Agriculture and the USDA's Dale Bumpers Rice Research Center near Stuttgart, gather in the lobby of the Peabody Hotel in Little Rock.

International Rice Scientists Meet In Little Rock About Efforts To Combat Destructive Rice Disease

LITTLE ROCK, ARK. Rice blast, caused by the fungus *Magnaporthe oryzae*, is the most destructive disease of rice worldwide, said Jim Correll, University of Arkansas Division of Agriculture plant pathologist.

As Arkansas rice growers face a second year of a blast epidemic in the Delta, some 175 rice scientists from more than 20 countries met at the Peabody Hotel for the fifth International Rice Blast Conference. The University of Arkansas Division of Agriculture and the USDA Dale Bumpers Rice Research Center near Stuttgart hosted the meeting. Correll and Yulin Jia, USDA research plant pathologist, are co-chairs of the meeting.

Former President Bill Clinton wrote a welcome letter to the group emphasizing the importance of rice and rice blast disease control worldwide. A number of prominent rice scientists gave keynote speeches, including Bob Zeigler, director of the International Rice Research Institute in the Philippines, the largest nonprofit agricultural research center in Asia.

Jia was also a keynote speaker. His research at the USDA center has been instru-

Dale Bumpers Rice Research Center near Stuttgart, tackle rice blast on many different fronts.

Plant pathologists work to understand the pathogen and its interaction with rice and other host plants, as well as environmental influences that inhibit or promote the disease, Correll said. Their research helps develop fungicide products and strategies to kill the fungus that causes blast.

Crop scientists study rice management strategies, such as timing and duration of flooding or



Photo on Top: Baohua Wang of the University of Kentucky, Lexington, left, and Jaelin Park of Seoul National University, South Korea, take photos of infected rice plants in a rice blast nursery at the University of Arkansas Division of Agriculture Rice Research and Extension Center near Stuttgart.

Bottom Photo: University of Arkansas Division of Agriculture plant pathologist Fleet Lee shows samples of blast-infected rice plants to an international group of scientists who attended the Fifth International Rice Blast Conference.



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mental in developing rice varieties with increased resistance to blast disease. He developed genetic markers that help plant breeders in Arkansas and elsewhere incorporate genes for blast resistance into improved varieties.

Rice is a food staple for more than 3 billion people around the world, largely in undeveloped nations, Correll said, which is what makes rice blast research so important internationally.

"Expanding global population will require doubling of rice yields over the next 50 years to meet demands, putting pressure on global food security," Correll said.

Since the last Rice Blast Conference in Changsha, Hunan, China, in 2007, availability of the genome sequences of rice and the blast fungus have resulted in significant advancement in rice blast research, Correll said.

"The international impact of rice blast disease makes it important that scientists stay current with work by their peers around the world," Correll said. "These meetings were begun for that reason and also to foster collaboration among the researchers worldwide."

"Wherever rice is grown, anywhere in the world, you find rice blast," Correll said. "Unchecked, blast can greatly reduce crop yields."

Correll said reduced rice yields would have a big impact on the agricultural economy in Arkansas, which grows about half of the rice produced and exported in the United States. The international scope of such losses is realized when considering that rice is the principal food source for many nations around the world, he said.

Division of Agriculture plant pathologist Rick Cartwright said a leaf blast epidemic is underway in the Delta region from northern Louisiana to southern Missouri. Many farmers have planted varieties rated susceptible or highly susceptible to the blast fungus, he said.

It is the second year in a row for a blast disease epidemic in the region, which produces about half of the rice grown in the United States. Yield losses were minimal in 2009, due to effective management by farmers, Cartwright said.

Correll said Division research and extension efforts, much of it in collaboration with USDA Agricultural Research Service scientists at the

lection of resistant varieties, that help growers manage the disease and preserve their yields. Division rice breeders work to identify blast resistance in breeding lines and transfer that trait into improved rice varieties adapted to Arkansas growing conditions.

USDA/ARS molecular biologists are discovering marker genes that help identify resistance and other desirable traits and help breeders use conventional crossbreeding techniques to move them into new breeding lines faster and with greater precision.

Correll said blast research and development of new, resistant varieties is a continuous effort because blast resistance is not durable.

"The rice blast pathogen is constantly evolving to overcome resistance," Correll said. "It's an arms race in which we're always looking for ways to develop more durable resistance."

Jia's research examines the interaction between resistance genes in rice and the genes in the blast fungus that overcome resistance. Correll looks at how resistant rice breeding lines and varieties hold up to existing races of blast.

"The better we understand the disease, the better we can develop improved resistance," Correll said.

"The pathogen will develop resistance to existing fungicides and find ways to overcome the resistance in today's resistant varieties," Correll said. "We have to work constantly to stay ahead of the disease and give farmers the tools they need to get good crops."

Lifetime Dedication to Rice Blast Research Awards were presented to three scientists during the conference:

Frances Meehan Latterell was research plant pathologist at the US Army Biological Laboratories, Fort Detrick, Maryland, and plant pathologist, US Department of Agriculture, Agricultural Research Service in Frederick, Maryland.

Sally Leong, an emeritus faculty member of the University of Wisconsin, Madison, first began working on rice blast in 1986 at the request of the Rockefeller Foundation Rice Biotechnology Program.

Toni Marchetti conducted research in rice blast over 39 years, first as a Research Pathologist with the U.S Department of the Army, then with the U.S. Department of Agriculture. Δ