



K-State plant pathologists from left, Barbara Valent, Xiaoyan Tang, James Stack, and William Bockus work in a Biosecurity Research Institute laboratory.

Expertise Draws Grant Funding

Protecting wheat and rice from devastating crop diseases and determining how climate variability will affect beef cattle operations on grazing lands are critical issues affecting U.S. agriculture. Because Kansas State University scientists have extensive expertise in these areas, they have been chosen to participate in two multistate partnerships funded by the U.S. Department of Agriculture.

Barbara Valent, a K-State university distinguished professor of plant pathology, leads an international team of researchers who received a \$5.5 million USDA grant to develop novel disease control strategies for two closely related diseases in rice and wheat.

Blast disease, caused by the fungus *Magnaporthe oryzae*, is a major constraint to global rice production and is an emerging and very serious threat to U.S. wheat, said Valent.

“Our goal is to leverage knowledge gained from previous research on rice blast as part of an integrated approach to improve U.S. rice production and protect the nation’s wheat crop,” Valent said.

Wheat blast was first discovered in Brazil in 1985 and has since been found in Bolivia, Paraguay, and Argentina. Three years ago it cut production in Brazilian wheat states by up to 60 percent in some areas. Rice blast caused significant crop

losses in fields in Louisiana, Texas, and Arkansas in 2012, and the disease has been reported this year in Louisiana.

“Rice and wheat are the two most important crops in the world,” said James Stack, K-State professor and director of the Great Plains Diagnostic Lab. “In most countries, either wheat or rice is a staple in citizens’ diets.”

Other K-Staters involved are plant pathology professors William Bockus, Erick De Wolf, and Harold Trick, and Sunghun Park, associate professor of horticulture.

Team members and collaborators from K-State and other major U.S. universities, the USDA, South America, and Europe met in Manhattan on June 14 for a wheat blast symposium and project meeting.

Christian Cruz, a doctoral candidate in plant pathology from Ecuador, has been nominated by the Manhattan Rotary Club for a Rotary Humanitarian Study Grant to experiment

with controls for wheat blast in Bolivia and Brazil and is awaiting confirmation of the \$30,000 grant from Rotary International.

The scientists are working in K-State's Biosecurity Research Institute, a facility that provides a safe and secure location to study high-consequence pathogens.

How Climate Affects Grazing

Chuck Rice, university distinguished professor of agronomy; Peter Tomlinson, assistant professor of agronomy; and Gerad Middendorf, associate professor of sociology; are leading K-State's portion of a \$9.6 million, five-year USDA grant to increase the resiliency of beef cattle operations in the face of climate variability.

"Protecting this vital resource from the stresses of climate variability is one key to our nation's food security," said Rice.

Other campus faculty include Dan Devlin, director of the Kansas Center for Agricultural Resources and the Environment; Aavudai Anandhi Swamy, research assistant professor; Jim Shroyer, crop production specialist; Walter Fick, range specialist; Dorivar Ruiz Diaz, nutrient management specialist; and DeAnn Presley, soil management specialist, all in the Department of Agronomy.

Justin Waggoner, beef systems specialist for the Southwest Research-Extension Center, along with Doug Shoup, crops and soils specialist, and Jaymelynn Farney, beef systems specialist, both from the Southeast Area Extension Office, complete the K-State team.

"Our uniquely qualified team will answer critically important research questions and deliver extension programming," said Tomlinson. "The project will provide information and technology to enable producers to make risk-based decisions about impacts of climate variability on beef cattle grazing operations in Kansas and the Southern Great Plains."

The grant partnership is led by Oklahoma State University, and includes scientists at the University of Oklahoma, USDA/Agricultural Research Service, Noble Foundation, and Tarleton State University.

Why K-State Gets National Funding

"K-State Research and Extension successfully competed to secure national grant funding for these important topics because people before us — university and college leadership, federal and state legislatures — had the foresight to invest in wheat, sorghum, water quality and usage, and range management. Now we are able to do extraordinary work on topics important to Kansas," said John Floros, dean of the College of Agriculture and director of K-State Research and Extension.

"We need to maintain our base funding — both state and federal — to hire and retain the best faculty and recruit graduate students to sustain this momentum and remain competitive."

"Studies done at K-State and nationally show that agricultural research has a strong return on investment. It generally ranges from a \$20 to \$30 return to the economy for every dollar invested in research, depending on how the data are modeled and the number of years used to calculate the payoff.

"With continued investment in research, we know we can make a difference," Floros said. "Through combined research, education, and extension efforts, we are providing short- and long-term solutions for Kansas and beyond. Our ultimate goal is to make our citizens' lives better."

