

Research institute to study wheat fungus

Kansas is lucky that a devastating wheat fungus isn't threatening the state's crops yet. Researchers at Kansas State University are getting \$1 million from the U.S. Department of Agriculture to keep it that way.

Barbara Valent, university distinguished professor of plant pathology, is leading a group of researchers to study the wheat blast fungus, a pathogen that has become a serious threat in Brazil.

"We don't know if our varieties in Kansas are susceptible, so we want to be prepared," Valent said.

The wheat blast fungus is a close relative of a devastating fungus that has long affected rice crops and another fungus that affects turf grass across the country. In the mid-1980s a close relative of these fungi began affecting wheat in and around Brazil, Valent said.

"It hasn't moved north from South America, but there's the potential that it could," she said. "We don't know where it came

from or what effects climate change may have on it."

That's why the U.S. Department of Agriculture's Cooperative State Research, Education and Extension Service is providing \$999,688 to study the fungus.

The K-State researchers from the department of plant pathology include professors William Bockus and James Stack, and Xiaoyan Tang, associate professor.

They will be working with Gary Peterson and Kerry Pedley of the U.S. Department of Agriculture's Agricultural Research Service Foreign Disease-Weed Science Research Unit, Fort Detrick, Md., and with collaborators from Brazil's Embrapa Wheat group.

Fred Cholick, dean of K-State's College of Agriculture and director of K-State Research and Extension, said getting the \$1 million grant recognizes K-State's experience in food safety and security in the field of plant health.

"This is what K-State as a land-grant university is all about -- solving problems before they

have a global impact," Cholick said.

"This is particularly important when you're talking about a wheat disease that could have a major impact on the economy," he said.

Valent said the project comprises three areas, the first of which is sequencing the fungus's genome to find genome fragments specific to the wheat blast pathogen. Valent said this would help in the creation of diagnostic tools that field specialists can use in the field to identify wheat blast.

"The disease looks a lot like wheat scab, so it's important to train people to look for wheat blast and to discern between the two," Valent said. "The longer a disease goes unnoticed, the harder it is to control."

The second area of research is screening the Kansas wheat varieties for resistance to wheat blast. All work with the fungus will be done in K-State's Bioscience Research Institute, a \$54 million biosafety-level 3 facility in Pat Roberts Hall on the K-State

campus.

"The Biosecurity Research Institute is a perfect facility for us to look at resistance in the Kansas varieties because we want to make sure the fungus doesn't spread," Valent said. "We're putting together a lab where the plants and fungus can be grown and stored, and where we can work with the fungus and destroy it after testing."

Beth Montelone, interim scientific director of the Biosecurity Research Institute, said, "We are very pleased that Dr. Valent and her colleagues will be bringing their wheat blast research to the BRI. We have a biosafety level 3-enhanced plant research laboratory that will offer excellent containment for this pathogen."

While K-State is doing research at the Biosecurity Research Institute, the U.S. Department of Agriculture's Agricultural Research Service will be testing select wheat and barley varieties as well as potential grass hosts from other regions of the U.S. in the agency's biosafety-level 3 facility at Fort

Detrick, Md.

Valent said that the genome sequencing part of the research will benefit from other campus resources as well, including a sophisticated genome sequencing apparatus that the Integrated Genomics Facility, housed in the department of plant pathology, recently acquired.

Valent said the researchers also will take advantage of the wheat varieties available at K-State's Wheat Genetic and Genomic Resource Center, led by Bikram Gill, university distinguished professor of plant pathology. The center maintains a gene bank with 2,500 wheat accessions.

Once the researchers have narrowed down a few Kansas varieties in the laboratory, they will further test the resistance by planting them in a test field in Brazil.

"We'll let the fungus find our varieties naturally," Valent said.

The third aspect of the project involves sharing findings about wheat blast with stakeholders in the state's wheat production.

This involves creating Web-based communication tools and organizing three workshops, individually tailored for extension professionals, industry professionals, policymakers or diagnosticians of the National Plant Diagnostic Network. Valent said that the workshops will take advantage of the Biosecurity Research Institute's capability to connect trainees in a conference room with scientists working in containment via video.

Valent said the project will offer experience to two graduate students, one in the communications field and another in plant science.

"One reason we're really excited about this project is that we're teaching students how to deal with plant bioterrorism threats," Valent said.

"The student in the sciences will be taught not only how to look for resistance, but also how to do it in a high-containment environment. That's not something students often get a lot of experience in," he said.

Real life ramifications for uninsured crops

Farmers in western Kansas need affordable, readily accessible crop insurance. Today's stakes are too high not to have this important tool available to them.

That was the consensus of nearly 100 landowners, producers, suppliers and others vested in agriculture at two meetings held in Goodland and Ulysses sponsored by Kansas Farm Bureau.

Held Feb. 25, the two meetings were designed to allow producers to provide input and voice their concerns about the Risk Management Agency's (RMA) proposed elimination of crop insurance on continuous planting of some non-irrigated acres.

A part of U.S. Department of Agriculture, RMA has concluded this practice is too high risk to warrant insurance coverage.

Insight John Schlageck

RMA has proposed cancellation of insurance products that provide coverage for these second crops in 18 counties in western Kansas and also parts of eastern Colorado and western Nebraska.

"I would really like RMA to sit back and take another look at what they're proposing," says Maurice Miller, who farms in Lane and Scott counties in southwestern Kansas.

"We must have the opportunity to put in that second (summer) crop and we need insurance on that second crop. Insurance is an integral part of our farming program."

One of the younger producers at the meetings was Clayton

Janicke, Cheyenne County. This northwestern Kansas farmer is 100 percent no till.

Janicke says he no longer drags iron through his fields and operates a more intensive rotation without any fallow periods.

He believes minimum till and no-till farming will provide higher production yields on his farm which in turn make crop insurance all that much more important.

"With the potential for greater yields and more income, crop insurance is absolutely essential for my farming business," Janicke says. "One hailstorm or another year of drought would be catastrophic for us. Without insurance for my crops, I'd be hung out to dry if and when I suffer a crop failure."

Like the other western Kansas

producers who attended the two meetings, Janicke believes RMA has used data from too narrow a time period 1999 - 2008.

According to records this 10-year period was the second driest period dating back to 1895, second only to the dust bowl period of the "Dirty Thirties." Western Kansas producers would like RMA to consider a 20 to 30 year period.

These same producers would also like RMA to consider the changes in more recent cropping practices in western Kansas including no till and minimum tillage, improving crop genetics and safer pesticides.

Another northwestern Kansas producer, Gerry Franklin from Sherman County, would like RMA to consider the current culture of farming in this region

of the state.

"We must be opportunistic out here," Franklin explains.

"When we have enough moisture and the conditions look favorable to produce a crop, we need to be able to plant such a crop and know if we do have a drought, hail or some other act of God, we can protect ourselves."

The protection he and the other producers were talking about is crop insurance. Western Kansas crop producers have always been quick to seek new cropping rotations that benefit their bottom line. This includes continuously planting non-irrigated acres.

"You can't penalize these producers for hail, drought and Mother Nature," says Steve Baccus, KFB president and Ottawa County farmer. "Because of their high input costs, machinery costs

and cash rents, they cannot afford to let this land lay idle. It has to be placed into production throughout the year."

Eliminating crop insurance will not work for producers in western Kansas, Baccus says.

He pledged to take the suggestions and ideas of producers in attendance at the two meetings to RMA.

"We're going to tell RMA not to make any changes immediately," Baccus says. "Let's hold the line for 2010 and 2011. We are committed to a workable solution for our farmers and RMA."

John Schlageck is a leading commentator on agriculture and rural Kansas. Born and raised on a diversified farm in northwestern Kansas, his writing reflects a lifetime of experience, knowledge and passion.

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