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Safe Food For All

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Safe food for all

When diseases threaten Kansas food crops and the agricultural economy, the Great Plains Diagnostic Network is ready for action.

The network, based at Kansas State University, is a partnership of universities and industry across the Midwest and provides quick and accurate diagnoses of emerging plant diseases. The Great Plains network is one of five regional networks in the National Plant Diagnostic Network, created by the U.S. Department of Agriculture after Sept. 11 to help the country stop the spread of diseases that threaten our food supply and agricultural economy.

With increased globalization, the network addresses the need to export clean material and protect existing agriculture from potential acts of bioterrorism. Kansas exports nearly half of its 10 million acres of wheat produced each year, and more than 1 million jobs nationally are tied to agricultural exports.

"The network allows us to detect, diagnose and provide the information appropriate for a rapid response," said Jim Stack, director of the Great Plains network and former executive director of the national network. "That's how you keep these situations small enough to manage."

The network fulfills three missions: diagnostics, detection and communications. The network trains extension agents for early detection of plant pests and has established an exercise program, where state officials, universities and laboratories practice responding to potential disease outbreaks.

Now in its 10th year, the national network has reached almost 120 labs, including 15 laboratories in nine states that make up the Great Plains network. When beginning the network in 2002, the USDA turned to Kansas State University to provide leadership for the Great Plains region. Stack, professor of plant pathology, joined the Great Plains network in 2003.

The university was already using Plant Diagnostic Information System — a software system for remote diagnosis of plant diseases and pests. Will Baldwin, former associate director for the Great Plains network and current information technology officer at Kansas State University's Biosecurity Research Institute, designed the system as a statewide tool for Kansas, but expanded its use nationally at the request of the USDA. Through the system, diagnosticians can transmit microscopic images to experts nationwide.

"The system ties together federal and state diagnostic laboratories so that they have access to data, can communicate among labs and upload diagnostic data to a national repository," Baldwin said.

The benefit is twofold: It helps epidemiologists monitor outbreak trends and establish geographic areas where certain pests do not occur. The system has led to numerous diagnostic successes.

When Asian soybean rust arrived in 2004, the network facilitated a rapid response. Similarly, the network was able to detect and prevent the spread of a strain of Ralstonia solanacearum — a bacterium that can hitchhike into the U.S. on plants and threaten potato and tomato crops.

The USDA has recognized the network's success in transforming plant diagnostics. International leaders are now turning to Kansas State University for help setting up similar networks in Australia and Europe.

"This model is being looked at around the world as an important piece of infrastructure that every nation should have in order to protect our production systems and our export markets," Stack said.

By Jennifer Tidball, Communications and Marketing

The Great Plains Diagnostic Network is protecting our food supply through early detection, accurate diagnosis and improved communications