Case Study: Asian Soybean Rust
The National Plant Diagnostic Network

The pathogen that causes Asian soybean rust was identified in the United States for the first time in November of 2004. Asian soybean rust is caused by a fungus that at the time of its arrival in the U.S. was classified as a select agent. The National Plant Diagnostic Network had targeted Asian soybean rust as a priority for preparedness activities and had conducted first detection exercises in all soybean states prior to its arrival. These exercises provided an opportunity for NPDN staff to work with university extension specialists, state and federal regulators, industry representatives and other crop health professionals to practice seamless chain of custody and communications protocols in the event of the occurrence of Asian soybean rust in the U.S. NPDN conducted 22 multi-agency exercises in 34 states over a 2-year period. These efforts strengthened working relationships among the various agencies, and provided a clear process for forwarding suspect samples as quickly as possible to APHIS for confirmation.

Without question, the NPDN exercise program was crucial for the first detection. On November 6, a researcher and NPDN first detector affiliated with Louisiana State University noticed a suspect plant in his soybean field plots and brought the diseased specimen to his laboratory for further analysis. The sample was digitally imaged with an NPDN microscope and conveyed electronically to the APHIS National Identifier in Beltsville, MD, who suspected almost immediately that they were dealing with Asian soybean rust. The physical specimen was sent by overnight mail to the APHIS identifier, the appropriate confirmatory tests were conducted, and within 72 hours of retrieval of the diseased soybean sample from the field in Louisiana a confirmatory diagnosis was made. On November 10, the Secretary of Agriculture formally announced to the nation that Asian soybean rust was present in the U.S. By December 1, the fungus had been confirmed in nine southern states. Samples were triaged for APHIS by each state's NPDN laboratory. These laboratories received authorization from APHIS to provide confirmatory diagnoses for the soybean rust fungus as more disease specimens arrived during the ensuing months. The triage role provided by NPDN relieved the APHIS national laboratory of an onslaught of samples that would have otherwise exceeded that laboratory's capacity to process them in a timely manner.

In 2005, the fungus was confirmed in other soybean states. Between 2004 and 2011, 47 NPDN labs tested 15,418 samples for the soybean rust pathogen. Since the arrival of Asian soybean rust in the U.S., the NPDN has supported regulators, researchers, extension personnel, and industry by continuing to monitor and diagnose soybean samples through the Soybean Rust and Legume Sentinel Plot Project of the Integrated Pest Management Pest Information Platform for Extension and Education (IPM PIPE).

"If it were not for the NPDN exercise for soybean rust, I would not have known who to call when we found the first US soybean rust sample in Louisiana."
Dr. Clayton Hollier, Professor of Plant Pathology and NPDN laboratory supervisor, Louisiana State University.