

Gene-Silencing Technique To Be Deployed Against Soybean Fungus

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The soybean rust fungus *Phakopsora pachyrhizi* may meet its match, thanks to a gene-silencing technique that scientists of the Agricultural Research Service (ARS) plan to deploy to identify genes that enable plants to naturally resist this fungal foe.

Molecular biologist Kerry Pedley, at the ARS Foreign Disease-Weed Science Research Unit at Fort Detrick, Md., will use gene silencing to discover plant genes that play a role in orchestrating defense responses to *P. pachyrhizi* in resistant soybeans. The fungus causes substantial losses to soybeans worldwide, and its September 2004 detection in the continental United States has accelerated efforts to protect the \$18 billion U.S. soybean crop.

Gene silencing allows scientists to identify a gene's function by disabling that gene in plants or other organisms, challenging the organism in some way—such as with exposure to a pathogen—and observing the consequences that result from that gene having been “missing in action.” In Pedley's studies, the gene-silenced plants will be inoculated with spores of *P. pachyrhizi*, and monitored for a breakdown in resistance.

Pedley's research plan was the top-ranked in a total of 450 proposals recently submitted to the ARS Postdoctoral Research Associate Program. In honor of his top ranking among the proposals, Pedley has received the agency's T.W. Edminister Award, named for a former ARS administrator, plus \$120,000 to fund a postdoctoral associate position for two years.

The ultimate goal of Pedley's research is to streamline the development of new soybean cul-

tivars that can withstand *P. pachyrhizi*, which causes a foliar disease that severely weakens the plant and diminishes its seed yields and quality. Pedley is collaborating with Iowa State University scientists, and this award will expand upon those efforts.

ARS officials also selected 50 other research proposals for two years of funding at \$100,000 per proposal under this year's Postdoctoral Research Associate Program. Other plans ap-



An ARS researcher will use the technique known as gene silencing to identify genes that enable plants to naturally resist the fungus that causes soybean rust, the foliar disease shown here that diminishes yields.

Photo courtesy of Reid Frederick, ARS

proved for funding include research on development of molecular-based pesticides for control of varroa mites in honey bees, methods to produce antimicrobial cotton wipes, use of remote sensing to monitor rangelands, and replacing fish meal with grain-protein concentrates in feed for Atlantic salmon production. △