New scientist tackles complexity of growing zebra chip disease

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The complexity of the zebra chip disease of potatoes, a vector-borne disease that is a growing industry concern recently drew Dr. Arash Rashed to the program directed by Dr. Charlie Rush, AgriLife Research plant pathologist.

Zebra chip, previously found primarily in Texas and the Southwest, was detected in the major potato-growing regions in the Columbia Basin of Washington and Oregon during September and in Idaho earlier this month, Rush said.

The disease, while not harmful to humans, is a quality issue for producers who lose money on infected potatoes, he said.

Rashed is the latest member added to a team led by Rush of 27 researchers and specialists across the nation working on a U.S. Department of Agriculture-National Institute of Food and Agriculture-sponsored Specialty Crop Research Initiative Project titled, "Management of Zebra Chip to Enhance Profitability and Sustainability of U.S. Potato Production."

Updates on the latest research from this group will be presented at the 2011 SCRI Zebra Chip Annual Reporting Session on Nov. 6-9 at the Crowne Plaza in San Antonio. For more information, go to zebrachipscri.tamu.edu .

Rashed is a vector ecologist who joined the AgriLife Research plant

pathology program in Amarillo as a post-doctoral research associate.

“Zebra chip is an important disease in the area and the type of questions we can answer and equally the complexity of the questions is what attracted me,” Rashed said. “There are so many aspects of the problem to be investigated and to be discovered, and when we find the answers, we will be able to help the growers.”

Zebra chip is caused by the plant pathogenic bacterium Candidatus Liberibacter solanacearum. The pathogen is transmitted to healthy potato plants by a vector known as the potato psyllid, he said. In addition to potatoes, peppers, egg-plant and tomatoes can also be affected.

“I’m very much interested in systems that are complex, and vector-borne diseases are complex, because there are multiple biological levels. There are the pathogens themselves, plants and also the insects, as well as the interactions between and among all of these components,” Rashed said. “Each of these interactions is affected by environmental variables, which lead to many questions that need to be answered.”

His particular work is designed to investigate how psyllids interact with potato plants. He is studying their inoculation efficiency and how the number of the psyllids on a plant affects the speed of disease development.

“I’m also looking at how psyllid appearance in potato fields is related to wild plants that may serve as alternative hosts,” Rashed said. “Answers to these questions would allow us to come up with integrated control approaches that would help to minimize psyllid dispersal and subsequently pathogen distribution.”

Rashed is conducting his studies in greenhouses and in the field at the AgriLife Research station near Bushland, as well as doing lab work to

detect and quantify Liberibacter in both the insects and plants.

He earned his doctorate in insect behavioral ecology and evolution at Carleton University in Ottawa, Ontario, Canada. Rashed grew up in Iran, where he also completed his bachelor's and master's degrees in entomology and plant protection.

Prior to coming to Amarillo, he was working on pathogen-vector-plant interactions at the University of California, Berkeley relating to another vector-borne disease system, Pierce's disease of grapevines.

Provided by Texas A&M AgriLife

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