Virus may chauffeur useful 'packages' into plants

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This time of year, the word "virus" conjures up a bedridden stint with coughs and chills - something everyone goes to great lengths to avoid.

But scientists for Texas AgriLife Research have gone the distance to show that at least some viruses can be put to work to help us.

A new study by Dr. Karen-Beth Scholthof and her husband Dr. Herman Scholthof, to be published in the January issue of Virology, shows that plant viruses may work like a trucking service loaded to carry freight to its destination.

"The idea is to have a virus do something good for us, like express a foreign protein and carry genetic information into a cell," said Herman Scholthof. The Scholthofs are plant virologists with AgriLife Research.

"The use of viral vectors to produce proteins in plants is attractive because of the potential high-protein output, the transient nature, the rapid applicability and active expression and the relative cost-effectiveness of the system," the Scholthofs wrote.

A problem with this type of system, however, has been that during transport a virus loses the gene or whatever it is intended to express.

"We're trying to outsmart the virus and make it stable for the job," Karen-Beth Scholthof said.

Herman Scholthof noted that "a virus recognizes a foreign object and does away with it."

In the lab, however, the Scholthofs were able to prove that the coat or particle protein of satellite panicum mosaic virus could be used as a tool to help stabilize viral vector genes introduced in *Nicotiana bethamiana*, a relative of tobacco and a model plant for research.

Satellite panicum mosaic virus only infects grass that is already infected with panicum mosaic virus, the pathogen that causes St. Augustine decline. If the virus particle protein were able to transport a gene into a non-grass species, this is an indication that with further research it could be used in a positive way to help plant breeders who want to carry good traits into the crops they are developing, the Scholthofs noted.

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