

NMSU experts expect little impact this year from chile-damaging virus

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As chile production season approaches, three New Mexico State University professors say the danger of curly top virus is higher than last year, but still in the low percentage range.

"The prediction for this year is that it is going to be a low year for curly top," said Rebecca Creamer, professor of plant virology, who has been researching the virus since 2001. "We didn't have large amounts of fall rains, so it will be in the 1 to 5 percent range. Most growers will not have a major problem."

This tri-trophic disease, which affects mostly chile plants in New Mexico, has required NMSU researchers in different disciplines to work together to investigate the different aspects and cycles of this disease, including the biology of the leafhopper, biology of weeds and virology.



The beet leafhopper, a microscopic insect, infects weeds and crops some years, creating huge economic losses for the chile industry in New Mexico.

"We need an integrated approach to research this virus," Creamer said. "We have been trying to work out the parameters of where the insects are living and the ecology because that has a huge influence on the virus being transmitted."

Curly top virus is transmitted from the tiny beet leafhopper insect, which feeds on weeds and certain crop plants such as chile and tomato, passing the disease from weeds to crops.

The virus is a prevalent problem in arid regions such as California, New Mexico, Arizona, Washington State and other places around the world including Mexico and Iran.

"The insect, in its immature stages, is practically confined to one plant, but as it grows and becomes an adult, it becomes mobile and begins colonizing new areas," said Scott Bundy, professor of entomology, who studies the biology of the insect.

The leafhopper has a different color for different times of the year. In the spring it is light green and as fall approaches, it becomes brown.

The greatest danger of curly top, Creamer said, lies in the weeds near crops because in southern New Mexico, the virus primarily lives on weeds.

"I always tell growers that they should be aware of their weed populations because if we know the weeds are going to be good hosts to the leafhopper and the virus, we suggest they try to remove them," Creamer said.

Even though the virus is more prevalent as weather gets warmer, the problem exists year-round mainly because of the presence of kochia weeds, which grow in the summer time, and London

rocket, which grows with moisture during colder weather. These weeds make excellent hosts for the leafhopper and the virus.

When the chile plants are infected, they become yellow, the leaves roll up and growth is stalled. The plant also becomes extremely stiff and it will not produce fruit.

"The weeds, the virus and the insects have grown together," said Jill Schoeder, professor of weed science, who researches the biology of weeds. "Unfortunately, the infected weeds do not show any damage from the virus so we have no way to tell which weeds are infected. It is impractical to think that we can control every weedy plant, but if we can understand where they are the biggest threat to our crop system, maybe we can do targeted weed management for growers and backyard gardeners."

In 2001, 2003 and 2005 the chile industry had huge economic losses due to curly top virus, Creamer said.

"Chile is a major crop in our region, so when plants are infected, it can cause significant economic damage," Schroeder said. "Every year local gardeners and community gardens are also devastated from infection from this virus."