

UTILIZING WILD *CAPSICUM ANNUUM* (CHILE PEPPER) FOR BREEDING *BEEET* CURLY TOP VIRUS RESISTANCE IN CULTIVATED HOT PEPPERS

Jimenez R.C.¹, Chen L.F.², Gilbertson R.L.², Hill T.H.¹, Van Deynze A.E.¹

¹*Plant Sciences Department*, ²*Department of Plant Pathology, University of California, Davis, CA, USA;*

Contact: Randi Jimenez, rcjimenez@ucdavis.edu

Geminiviruses are the largest family of viruses threatening global vegetable production. Additionally, *Beet curly top virus* (BCTV) is one of the most damaging geminivirus of chili pepper (*Capsicum annuum*) in the United States that can result in yield losses ranging from 20-80%. BCTV is transmitted by leafhoppers (*Circulifer tenellus*) and infect a wide range of plants, such as pepper, bean, sugar beet, tomato, cucurbits and spinach. Both the virus and the insect vector continue to be difficult to control.

Our goal is to investigate germplasm sources from landraces collected in Mexico, where virus is prevalent, as well as 10 lines from the literature for resistance to BCTV. To identify sources of resistance, we utilize a rapid *Agrobacterium*-mediated inoculation assay. Interestingly, 20% of the accessions from the literature were susceptible to BCTV, while only 26% of the wild accessions appeared to be susceptible. Resistance has been confirmed using a leafhopper assay for some of the wild accessions.

Several accessions identified as resistant have been crossed into a cultivated, susceptible jalapeño variety to generate and test populations segregating for BCTV resistance and favorable agronomic traits. These populations are being used to determine the genetics of BCTV resistance in pepper. Our long-term goals are to develop and release pepper breeding lines that combine resistance from wild pepper germplasm to BCTV, as well as to determine the genetic basis of this resistance. Identifying genetic resistance from multiple sources is the key to integrated management programs to protect yield and quality in pepper and other crops.