

WINTERMANTEL, W.M.^{1*}, L.L. HLADKY¹, A.A. CORTEZ¹, L.-F. CHEN², and R.L. GILBERTSON², ¹USDA-ARS, 1636 East Alisal Street, Salinas, CA 93905 and ²University of California, 1 Shields Ave., Davis, CA 95616. **Differential accumulation and transmission of traditional and emergent *Beet curly top virus* strains from of the western United States.**

Curly top disease, caused by various strains of *Beet curly top virus* (BCTV), causes significant economic losses for sugarbeet throughout the western United States. Recent surveys in California and the Pacific Northwest identified a rapid shift in the predominant strains of BCTV impacting agriculture, with new emergent strains supplanting traditional strains of the virus in both regions, resulting in some changes in severity and affected host plants that may reflect the prevalence of the new strains over traditionally common strains. To identify factors leading to emergence of new strains, competition studies were conducted in which sugarbeet and other host plants were inoculated with new and traditional BCTV strains as single or co-infections using agroinoculation of cloned viral DNA. Some infections were established using leafhopper transmission due to difficulty in obtaining viable infection with clones of specific strains with the agroinoculation method. After four weeks, test plants were evaluated for virus accumulation using qPCR, and used for leafhopper transmission to new test plants, followed by determination of which strains were transmitted most effectively. Results demonstrated preferential accumulation of some strains in a host plant-specific manner. This indicated that some BCTV strains are better adapted to some host plants than others, and that host plants may have a substantial influence on emergence and dominance of BCTV strains. Secondarily, these studies also suggested that BCTV strains that have difficulty in establishing infections from cloned DNA cannot be compared reliably using agroinoculation, because these strains are at a selective disadvantage in establishing infections. Results have implications for virus propagation for curly top nurseries, and begin to clarify factors influencing emergence of new BCTV strains.