WEILAND, JOHN J.[1*], REBECCA L. LARSON[2], THOMAS P. FREEMAN[3], MICHAEL C. EDWARDS[1], and HSING-YEH LIU[4], [1]USDA-ARS, Red River Valley Agricultural Research Center, Fargo, ND 58105, [2]USDA-ARS, Sugarbeet Production Lab, Fort Collins, CO 80526, [3]North Dakota State University, Fargo, ND, 58105, and [4]USDA-ARS, Sugarbeet Production Lab, Salinas, CA 93905. **Discovery of Beet Black Scorch Virus in the United States.**

ABSTRACT

Emerging diseases of sugarbeet in the U.S. caused by viruses, bacteria, and fungi have been observed in recent years that primarily are soilborne in nature. In October of 2005, sugarbeet roots exhibiting symptoms indicative of Rhizomania were processed to generate inoculum for the recovery of beet necrotic yellow vein virus (BNYVV), causal agent of that disease. *Chenopodium quinoa* plants treated with inoculum exhibited lesions indicative of a viral disease, but expanding rapidly and uncharacteristically for BNYVV or the related virus beet soilborne mosaic virus (BSBMV). Thin sections of infected *C. quinoa* leaves examined by electron microscopy revealed densely packed aggregates of icosahedral virus particles. A purified preparation of the virus was used for genome cloning and to prepare rabbit antiserum for diagnostic purposes. Cloning and sequence analysis of the solitary 3.6 kb single-stranded RNA purified from virus particles revealed a genome with an organization characteristic of the plant Necroviruses in the family Tombusviridae. Alignments of the nucleotide and encoded protein sequences indicated that the virus was Beet Black Scorch Virus (BBSV). A sensitive double antibody sandwich enzyme-linked immunosorbant assay (DAS-ELISA) for BBSV based on rabbit antiserum against the virus was produced. This constitutes the first report, to our knowledge, of the existence of BBSV outside of China.