

STRAUSBAUGH, CARL A.^{1*}, IMAD A. EUJAYL¹, and WILLIAM M. WINTERMANTEL², ¹USDA-ARS NWISRL, 3793 N. 3600 East, Kimberly, ID 83341, and ²USDA-ARS CIPRU, 1636 East Alisal St., Salinas, CA 93905. ***Beet curly top virus* strains associated with sugar beet in Idaho, Oregon, and a survey collection.**

Curly top of sugar beet is a serious yield limiting disease in semi-arid production areas caused by *Beet curly top virus* (BCTV) and vectored by the beet leafhopper (*Circulifer tenellus*). The primary means of control for BCTV is host resistance, but effectiveness of resistance can vary among BCTV strains. BCTV variation was last investigated in Idaho and Oregon during a 2006-2007 survey, but changes in disease severity suggested a need for reevaluation. Therefore, 406 leaf samples symptomatic for curly top were collected from sugar beet plants in commercial sugar beet fields in Idaho and Oregon from 2012 to 2015. DNA was isolated and the BCTV strain composition was investigated based on polymerase chain reaction (PCR) assays with strain specific primers for Severe (Svr) and California/Logan (CA/Logan) strains and nonspecific primers that amplified Worland (Wor)-like strains. The 2006-2007 ID/OR BCTV positive samples from sugar beet included the following strains: 87% Svr, 7% CA/Logan, and 60% Wor-like. BCTV strain distribution in the new survey averaged 2% Svr, 30% CA/Logan, and 87% Wor-like. Whole genome sequencing (GenBank accessions KT276895 to KT276920 and KX867015 to KX867057) with overlapping primers, suggests that the Wor-like strains included Wor, Colorado (CO), and a previously undescribed strain designated Kimberly1 (Kim1). The Kim1 strains have 2929 to 2933 nucleotides with seven open reading frames encoding proteins homologous to those of other curtoviruses. The most closely related BCTV strain to Kim1 is LH71, a strain now emerging in California. Analysis reveals a shift in the composition of BCTV strains in Idaho from Svr being a dominant strain in commercial sugar beet fields in 2006-2007 to having greatly reduced prevalence in recent years.