

GALLIAN, JOHN J., and CHARLES E. STANGER. Department of Plant, Soil and Entomological Sciences, University of Idaho, P.O. Box 1827, Twin Falls, Idaho 83303-1827, and Oregon State University, Malheur Experiment Station, Ontario, Oregon 97914. - Relationship of curly top virus disease ratings to yield loss under conditions of natural field infection. ABSTRACT.

A high level of curly top virus resistance in sugarbeet varieties is necessary in order to grow an economical crop in Idaho and eastern Oregon. In 1992, the Amalgamated Sugar Company growing area experienced the worst infection from curly top virus in about 20 years, with an estimated loss of 400,000 tons valued at about \$14 million. Curly top disease ratings and yield were taken on a severely infected variety test near Ontario, Oregon. Root yield for commercial varieties ranged from 41.08 to 14.60 tons/acre, with the highest yielding varieties having the lowest disease ratings. The relationship between root yield and curly top rating was highly significant;  $R=0.89$  and  $R^2=0.79$ . The regression coefficient was  $-5.78$  tons/acre for each curly top unit of increasing susceptibility. Response of experimental varieties was similar with a yield range of 40.30 tons/acre;  $R=0.89$  and  $R^2=0.80$ . Regression coefficient was  $-7.00$  tons/acre. No differences were observed in % sucrose or % extraction.