

Rhizomania has been a serious disease of sugarbeet in California since at least 1983. In 1985 the disease was recognized to occur in Texas. Until this year, the known distribution of the disease was limited to these two areas in North America. In July, 1992, plants in a sugarbeet field near Morrill, Nebraska exhibited unusual symptoms. Specimens were collected and assayed for various sugarbeet pathogens using the appropriate methods. Results of these analyses indicated that the plants were infected with beet necrotic yellow vein virus (BNYVV), the causal agent of rhizomania. Symptom expression on these specimens was minimal. Little or no feeder root proliferation or necrosis was evident. The tap roots were normally shaped, and did not exhibit the common acute constriction normally associated with BNYVV infection. The most evident symptom was necrotic vascular tissue visible in the central core of the tap root when it was sliced longitudinally from the tip towards the crown. This necrosis started at the distal point of the tap root and proceeded several centimeters upward toward the crown of the beet. Examination of the field revealed the widespread occurrence of this symptom, indicating that the virus was distributed throughout the field. Subsequent surveys of fields in the same area revealed similar symptoms. Soil samples and sugarbeet root samples were collected from throughout the growing area of the Holly Sugar factory in Torrington, Wyoming. A total of 168 soil samples were collected, of which 68 tested positive for BNYVV by ELISA. The ELISA utilized F(ab')₂ fragments to trap antigen, IgG to probe antigen, and protein A-alkaline phosphatase conjugate to detect bound IgG. A similar survey was conducted in the growing area for the Holly Sugar factory in Worland, Wyoming. In this area, mostly root samples were collected. Samples from 95 fields were collected, of these, samples from 41 fields tested positive for BNYVV. The widespread occurrence of the virus in both areas indicates that the virus has been in these areas for at least several years. The absence of major symptom development has allowed these infestations, until now, to go unnoticed. The lack of symptom development could be due to environmental conditions unsuitable for disease development or to other unknown factors. Disease loss assessment experiments will be conducted in these areas to determine the amount of loss being sustained by growers due to BNYVV.