WEILAND, JOHN J.[1*], NEUBAUER, JONATHAN[1] AND BOLTON, MELVIN D. [1]USDA-ARS, Red River Valley Agricultural Research Center, Fargo, ND, USA. **Commercial sugar beet in Minnesota possessing the Rz2 gene and testing positive for BNYVV.**

Sugar beet production in Minnesota was under threat from the emergence of Rhizomania disease in the 1990s and the inclusion of Rz1 gene for resistance to the disease in subsequent approved varieties proved efficacious in producer fields. Defeat of Rz1 in many regions by resistance-breaking (RB) isolates of BNYVV, causal agent of rhizomania disease, prompted addition of a second resistance gene, Rz2, to the defense arsenal in an effort to retain economic viability to sugar beet production where needed. As a proactive measure, the majority of producers in Minnesota currently grow commercial hybrids possessing both genes; additional genes may be present as part of the resistance selection process implemented by the seed industry. In an effort to establish a baseline for the detection of BNYVV in field-grown sugar beet possessing the combined Rz1 +Rz2 resistance package, beet roots of such varieties as well as several possessing Rz1 alone were obtained from production fields in the American Crystal, Min-Dak Farmers, and the Southern Minnesota Beet Sugar Cooperative regions of Minnesota. Beet root morphology ranged from those exhibiting classic Rhizomania disease to healthy looking roots with several of the latter nevertheless exhibiting occasional hairy root proliferation in the root furrow. Testing of the lateral rootlets and root hairs by ELISA yielded positive confirmation of the presence of BNYVV in the tissue for most roots tested while several healthy roots tested negative for the virus. The molecular typing of the BNYVV obtained from test-positive roots with respect to genomic regions implicated in RB ability will be presented. Factors combining with the discovery in the impact on future yields will be discussed.