RUSH, C.M.*[1], D. JONES[1], K. STEDDOM[1], and L.G. CAMPBELL[2], [1] Texas Agricultural Experiment Station. Amarillo, TX 79012 and [2]USDA-ARS, Northern Crop Science Laboratory, Fargo, ND, 58105. **Investigation of blinkers in rhizomania resistant fields in Minnesota.**

Since rhizomania was first identified in Minnesota in the mid 1990's, acreage planted to rhizomania resistant sugar beet cultivars has increased steadily. In recent years, individual beets have been observed in rhizomania resistant fields that exhibit foliar and root symptoms typical of rhizomania. These symptomatic beets are called blinkers and their incidence has increased during the last two growing seasons. This increase has raised concerns among farmers and seed producers about the stability and longevity of genetic resistance. In September, 2004, sugar beets were collected from rhizomania resistant fields in southern and northern Minnesota. Ten sugar beets, eight blinkers and two apparently healthy, were harvested from each field and a total of 390 sugar beets were collected. Each sugar beet was give a disease rating, tested for presence of BNYVV, scanned with a hyperspectral radiometer to determine the severity of leaf chlorosis, and tested for presence of absence of the *Rz* gene that confers resistance to rhizomania. Later, percent sucrose was determined for the blinkers and healthy beets from each sample. Forty eight percent of the apparently healthy beets tested positive for BNYVV but 88% of the blinkers were positive. The mean rhizomania severity rating for the blinkers was 2.98 on a 0 – 4 scale, while the rating for healthy beets was significantly less at 1.2. The mean ELISA reading for blinkers was significantly higher than for infected "healthy" beets and healthy beets averaged 15.62 percent sucrose compared to 13.95 for blinkers. If molecular analysis reveals that blinkers are lacking the *Rz* gene these results will support the claim that rhizomania is causing significant losses throughout the major sugar beet production areas of Minnesota, but if the *Rz* gene is present it will suggest that genetic resistance is breaking down.