

PANELLA, LEE*, ANN L. FENWICK, TRAVIS VAGHER AND MARK S. WEST, USDA, Agricultural Research Service, 1701 Center Avenue, Fort Collins, CO 80526. **Analyses of rhizoctonia screening nursery results over 15 selected years from 1980 to 2015.**

The USDA-ARS has had a research program at Fort Collins focused on breeding for resistance to Rhizoctonia crown and root rot (Rcrr) since the late 1950s. By 1980, current resistant and susceptible checks were in use. All individual roots from each plot were lifted and rated on a disease index (DI) scale of 0 (healthy, no disease) to 7 (dead, or missing). Their scores were averaged to provide a plot mean, used for analyses. Full data (individual root DIs in plots) from 119 experiments ranging over 15 years between 1980 and 2015 were labeled by type (commercial hybrid, ARS release, Plant Introduction [genebank accession], or seed company experimental line) and source (cooperative, ARS research program, or seed company). Resistant and susceptible checks were labeled by name and by seed lot. Because each year and each experiment is a different environment (temperature, rainfall, position in the field, etc.), DI scores will vary making it difficult to compare sugar beet varieties across experiments and years. We examined a number of questions. Do DI scores from susceptible and resistant checks, when compared to DI mean scores from trials, allow us to understand the potential restrictions of DI values with increasing disease pressure? Along those lines we asked how consistent our checks performed over years, experiments, and seed lots. We were very interested in finding good ways to compare results over years and among experiments within years? We also were interested in looking at commercial hybrids over the past 20 years to see if their average resistance had increased or decreased over time. One of the most important purposes of our screening nursery is to identify Plant Introductions with resistance to Rcrr. Therefore we examined if plot variance among individual roots could indicate accessions that may be segregating for resistance to Rcrr, and how we best could compare our results over years, when most accessions are screened in only one year.