

REGITNIG, PETER J.\*and BRYAN R. AVISON, Lantic Inc., 5405 – 64<sup>th</sup> Street, Taber, Alberta, T1G 2C4. **Assessing variety improvements in Alberta.**

Historical seed production for Alberta involved an internal company breeding program that continued until 1977. The last variety released from this program was an open-pollinated variety named CS43 that was used until 1980. Several bags of this seed were kept in storage and in 1993 a fresh increase of seed of CS43 was produced in order to compare performance with the best commercial varieties at that time. A small quantity of this 1993 seed was again kept in storage. Germination was 74% when CS43 seed was tested in 2015. A small plot study was conducted in 2015 and 2016 to measure improvements in variety performance by comparing this 1970's variety to a current Roundup Ready variety. CS43 was overplanted and thinned to ensure sufficient stand was achieved in these trials. There was an average gain of 52% in extractable sugar per acre (ESA) when comparing a current Roundup Ready variety sprayed with Roundup WeatherMax herbicide to the 1970's variety sprayed with conventional herbicide. When the current Roundup Ready variety and the 1970's variety were both sprayed with conventional herbicide the average gain in ESA was 40% for the Roundup Ready variety. Trials conducted in 1994 and 1995 showed a 22% gain in ESA when current commercial varieties were compared to CS43, suggesting similar rates of varietal improvement before and after the mid 1990's when herbicide setback was not taken into account. Significant plant growth setback was observed for varieties sprayed with conventional herbicides in the 2015/2016 trials. When a Roundup Ready variety was sprayed with Roundup WeatherMax, ESA was 8% higher than the same variety sprayed with conventional herbicides. Plant growth setback from conventional herbicide reduced root yield by 2.3 tons per acre, but had little effect on sugar beet quality.