

GILES, J.F.\*, and N.R. CATTANACH, Department of Soil Science, North Dakota State University, Fargo, ND 58105. **Effect of planter ground speed on uniformity of sugarbeet within-row spacing and production in the Red River Valley.**

ABSTRACT

Increasing ground speed of a MaxEmerge 2 planter results in non-uniform seed spacing on a planter test stand. The uniformity of plant spacing in the field influences the growth of sugarbeet, ground cover for weed control and the ease of top material during harvest operations. The amount of top growth left on the sugarbeet crown has an influence on the recoverable sugar during processing. The objective of this study was to evaluate the effect of ground speed on the uniformity of within-row spacing of sugarbeet and sugar production in the soils of the Red River Valley of the North.

Field studies were conducted in 1999 and 2000 on Fargo silty clay (Fine, smectic, frigid, Typic Epiaquert) and Bearden silt loam (Fine-silty, mixed, frigid Aeric Calciaquoll) soil. Raw and pelleted seed types and ground speeds of 4, 5, 6 and 7 mph were used in these studies both years. Plant space distribution was determined at the 2 to 4 leaf stage and harvest root yield and extractable sucrose were measured at each location each year. Post emergence herbicides, cultivation and hand labor were used as needed for weed control.

Uniformity of plant spacing decreased with increasing ground speed regardless of seed type. A half-inch of precipitation fell on the study within two days after planting resulting in even plant emergence across all treatments. The seeding of small raw seed with and a medium sugarbeet plate resulted in a large number of doubles at all ground speeds, compared to the plant spacing pattern with 2M pellets. Sugar production in 1999 was not significantly affected by ground speed, but given the large plant population established, even with a 5-inch seed spacing, a limited effect was expected.

Medium raw seed was used in 2000 and compared to 4M pellets. Both of these seed types were planted on a modified ridge system and conventional seedbed. With the increased seedbed moisture in the modified ridge system, it was hoped to measure the effect rainfall following planting might be measured. Excellent stands were established on both seedbeds, due to rainfall within four days of planting, and resulted in plant populations above those desired at harvest time. Plant populations resulting from pelleted seed were decreased with increasing ground speed on both seedbed types. Uniformity of plant spacing was decreased with increasing ground speed with both seed types. Because of harvest plant populations greater than those recommended, increasing ground speed did not affect sugar production in 2000.

The effect of an increased number of smaller beets resulting from the increased non-uniformity with increasing ground speeds on the long-term storage pile ventilation was not measured in these studies. This may have a large impact in the Red River Valley of the North.