

ABSTRACT

Fields within a geographical area which are prepared for seeding during the same time period with various secondary tillage implements do not result in equal sugar production. The objective of this study was to evaluate seeding emergence in seedbeds prepared by three secondary tillage systems in combination with a small grain drill.

Secondary tillage experiments were established on silt loam soil near Arden, ND in 1989 and near Casselton, ND in 1990 and 1991. Tillage was performed with a half

**TRAVELLER, DEL J., The Amalgamated Sugar Company, P.O. Box 127, Twin Falls, ID 83303 - Yield, sugar content and quality factors as affected by stand density. A three year study.**

and 1 1/2 inches deep and at 0.5, 3, 6, 24, 48 and 96 inches spacing. Moisture content and bulk density

Reported in this study are Company wide production and beet quality parameters at various stand densities for the years 1990, 91 and 92. Stand density was determined by dividing the number of beets coming into the tare lab from each field by the weight of those beets and then dividing this (average weight per beet) number into the final tons per acre. The resultant figure is then expressed on grower reports as stand count or beets per 100 feet of row. Harvest data for 1990, 91, 92 and the three years combined were computer sorted into stand groups beginning at less than 60 beets per 100 feet of row and continuing in 10 beet increments up to greater than 150 beets per 100 feet of row. Data from under 80 beets and over 140 beets per 100 feet of row are omitted from the summary because of not being representative.

The data combined for this three year period showed that for every 10 beet increase per 100 feet of row, between 80 and 140 beets (19,000 to 33,000 plants per acre) the following production benefits occurred: Tons per acre increased by 1.22 tons, sugar content increased by 0.33%, brei nitrate decreased by 6.33 PPM, and conductivity decreased by 0.005 MV. These data indicates that field production and beet quality can be maximized by achieving and maintaining harvested plant populations in the range of 30,000 - 35,000 plants per acre.