

EFFECT OF FALL APPLIED SUGAR BEET WASTE LIME ON SOIL PENETROMETER RESISTANCE THE FOLLOWING SUMMER

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Sugar beet growers have related that the application of high rates of sugar beet waste lime resulted in better 'tilth' compared to similar soils that did not receive waste lime. Evidence of lower tractor draft from tillage has been provided by grower testament. This study was conducted to investigate the effect of sugar beet waste lime on soil penetrometer resistance the following summer from a fall application.

METHODS

The study was conducted on a Fargo-Ryan soil between the new NDSU greenhouses and the Fargo campus NDAWN station on the south side of the Campus Tillage Plots. Waste lime was provided by the American Crystal Moorhead processing factory spring 2013. The lime was stored indoors and applied by hand November 14, 2013. The experimental design was a randomized complete block with 4 treatments (check, 4, 8, and 16 tons per acre sugar beet waste lime) and 4 replications. Soil penetrometer readings were taken November 13, 2013. No significant differences between intended treatments or blocks were evident in the pre-treatment readings. Three treatment readings were taken within each 10 foot by 25 foot individual treatment area. A 5 foot alley way was left between treatment blocks. Following application, the area was tilled to 8 inches using a chisel plow with straight shanks. The study was a fallow area and weeds were controlled by multiple sprays of Roundup-Max with ammonium sulfate at recommended rates. Weeds were not allowed to grow more than 2 inches tall at any time during the study. Penetrometer readings were taken July 14, 2014.

RESULTS

Penetrometer readings were similar between treatments, with no significant differences in penetrometer readings for any depth with any treatment.

CONCLUSIONS

There were no differences in between sugar beet waste lime treatments with application of up to 16 tons/acre in soil penetrometer readings. Soil penetrometer readings only register downward pressure. Draft of farm implements may respond differently.