

YONTS, C.D., University of Nebraska, Panhandle Research and Extension Center, 4502 Avenue I, Scottsbluff, NE 69361. **Development of season long deficit irrigation strategies for sugarbeets.**

ABSTRACT

In many of the irrigated regions, water restrictions and drought are causing sugarbeet producers to deficit irrigate as a method to sustain available water supplies. The objective of this experiment was to evaluate the production of sugarbeets when irrigation water supply is limited and deficit irrigation is practiced throughout the entire growing season. The study was conducted during 2007 and 2008. Sprinkler irrigation was used to establish nine water treatment levels ranging from full irrigation to no irrigation applied during the growing season. The full irrigation treatment was based on the evapotranspiration (ET) requirement of sugarbeets. Other treatments included 75%, 50% and 25% of full ET. Four treatments were selected to vary the amount of water applied before and after mid-August. Before and after mid August treatments were 100/50%, 75/25%, 50/100% and 25/75%. Irrigation amount was reduced by a fraction of the full irrigation amount by using smaller size nozzles. Sucrose content for the no irrigation treatment increased in 2007 but decreased in 2008 in comparison to the other irrigation treatments that were similar. Root yield and sugar yield tended to decrease when irrigation was reduced to levels of 50% of ET or less. Sugar loss to molasses was greatest for the no irrigation treatment.