PICCINNI, GIOVANNI, AND CHARLES M. RUSH, Texas A&M University, Texas Agricultural Experiment Station, P.O. Drawer 10, Bushland, TX 79012. Water use efficiency and disease severity of sugar beet grown in pathogen-infested soil.

An experiment was conducted in a controlled environment to evaluate the effect of three irrigation amounts on disease development and water use efficiency in sugar beet. Three pathogen treatments, beet necrotic yellow vein virus (BNYVV), beet soilborne mosaic virus (BSBMV), BNYVV+BSBMV, a non-inoculated control and three irrigation amounts, pot capacity (PC), 75% PC and 50% PC, were arranged in a split plot design and replicated five times. Pots of each treatment were weighed every other day to determine evapotranspiration. Evaporation was determined from unplanted pots, and plant transpiration was calculated by the difference. The treatment irrigated at 75% pot capacity showed minimal disease incidence and a root weight comparable to the fully irrigated healthy control. Plants from BNYVV-infested seed had a significantly higher disease incidence than BSBMV and BNYVV+BSBMV treatments. Beets in the BNYVV+BSBMV treatment had a significantly higher root weight and water use than beets in the BNYVV treatment suggesting competition between the two viruses.

a utility careprint when plots were ungated at interant hequencies. Measurements facen during the secson included top fresh weight, top dry weight, nod tresh weight and number of teeds per metar. Soil moutbare was in sammed by use of u neutron prone. At hervesh root yield, number of boets per metar, disease index, percent success, and stand counts was environmed. Highest disease index and coverst per ent energies, couldned in trols percent success than in full rate plots. Sugar bests infigated the least fuel a trighter the ynown and compare that in the nightest yield and the lowest disease incidence. These results indicate that queease losses can be reduced and yields ou cased with improved impation management.