

MORAGHAN, JOHN T.<sup>1\*</sup>, and LARRY J. SMITH<sup>2</sup>, <sup>1</sup>North Dakota State University, Walster 131, Fargo, ND 58105, and <sup>2</sup>University of Minnesota, Northwest Experiment Station, Crookston, MN 56716. - Mineralization of nitrogen from sugarbeet tops and the growth of a subsequent wheat crop.

Sugarbeet tops, because of their N content, can influence the yield of subsequent crops. Sugarbeet tops were removed prior to the root harvest from experimental areas in two Red River Valley fields in 1992 and 1993. The influence of fall-applied urea and high (3.48 and 2.58 % N in 1992 and 1993, respectively) and low N (1.48 and 1.26% N in 1992 and 1993, respectively) sugarbeet tops on growth of wheat in 1993 and 1994 was studied. Urea increased yields by up to 31 bu/acre in 1993 and 28 bu/acre in 1994; the optimal urea rate was 120 pounds N/acre. High N sugarbeet tops, containing 216 pounds N/acre in 1992 and 189 pounds N/acre in 1993, increased wheat yields by 36 bu/acre in 1993 and by 29 bu/acre in 1994. The corresponding increases from low N tops, containing 58 pounds N/acre in 1992 and 77 pounds N/acre in 1993, were 7 bu/acre in both years. Separate field experiments indicated that high N sugarbeet tops mineralized appreciable quantities of nitrate in the spring. Most of this mineralized NO<sub>3</sub>, but only part of the Cl added in sugarbeet tops, was found in the upper 12 inches of soil. Sugarbeet tops can reduce the N-fertilizer requirement of subsequent crops, and must be considered in relation to nitrate pollution.