

Response of Sugar Beet, *Beta vulgaris* (L.) to Irrigation with Saline Water, Organic Manure and Soil Texture

S.F. El Habbasha, E.M. Okasha* and M.A.A. Abdou*

Field Crops Research Dept. and *Water Relations & Field Irrigation Dept., National Research Centre, Cairo, Egypt.

A POT experiment was conducted on sugar beet, *Beta vulgaris* (L.), in a greenhouse of National Research Centre, Dokki, Egypt, during the two winter seasons 2006/07 and 2007/08. The treatments included the combinations of two soil textures (clay and sand), three saline water irrigation levels, viz. tap water (Control = 300), 4000 and 8000 ppm and three quantities of organic manure (zero, 12.5 and 25.0 m³/feddan, 1 feddan = 4200.78 m²). Results indicated that soil texture, saline water irrigation and organic manure significantly affected most of studied traits. Higher values on leaves and root traits were produced by 300 ppm and 25.0 m³ manure. Root was the biggest in sandy soil. Clay soil produced pronounced root traits increasing salinity in irrigation was significantly detected studied traits. The effect of manure was in opposite to salinity one. The first order interactions: salinity x either soil or manure showed lesser significant differences, in opposite to (soil x manure). Only fresh and dry weights were significantly affected by the second order interactions. The recommended combination was (sand soil x 300 ppm water x 25.0 m³ manure).

Keywords: Sugar beet, Soil texture, Salinity, Saline water irrigation, Organic manure.

Sugar beet, *Beta vulgaris* (L.), is the second source of sugar (about 30%) after sugar cane (about 70%). Such position covers world and also Egypt. The local gap between sugar production and consumption may reached about 28%. Sugar beet has some advantages: the ability to store high sucrose percentage, the by-products which are used for alcohol production and livestock feeding and the wide adaptability to grow in poor, saline and alkaline soils.

Higazy *et al.* (1995) reported that sugar beet cv. Tribel was the most salt tolerant variety and could withstand up to 6000 ppm salt concentration in irrigation water, without any significant reduction in fresh and dry weights of roots as well as sucrose %. Khafagi & El-Lawendy (1996) found that fresh and dry weights of leaves and roots, number of leaves, diameter and length of root were significantly reduced with the increase of NaCl level. Mekki & El Gazzar