



## Root system stabilization of sugarcane fertigated by subsurface drip using a minirhizotron

Augusto Yukitaka Pessinatti Ohashi (1), Regina Célia de Matos Pires (1), Andre Luiz Barros de Oliveira Silva (1), and Rafael Vasconcelos Ribeiro (2)

(1) Agronomic Institute, Ecophysiological and Biophysics Center, Campinas, Brazil (rcmpires@gmail.com), (2) Biology Institute, Unicamp, Campinas, SP

To improve the efficiency of water use in irrigation practices and to provide information for modeling the knowledge of plants root system becomes necessary. The use of subsurface drip irrigation (SDI) in sugarcane cultivation is an interesting cultural practice to improve production and allow cultivation in marginal lands due to water deficits conditions. The SDI provides better water use efficiency, due to the water and nutrients application in root zone plants. However, despite of the agronomic importance, few studies about the root system of sugarcane were performed. The use of root scanner is an alternative to the evaluation of the root system, which enables the continuous study of the roots throughout the cycle and for many years, but data about the use of this method for sugarcane are still scarce. The aim of this study was to determine the time required for stabilization of the root system growth of sugarcane cultivar IACSP-5000 around the access tube in which images were captured. The field experiment was carried out in Campinas, São Paulo State, Brazil. The fertigation was applied by a subsurface drip system.. The soil moisture was monitored by capacitance probes. The pH and electrical conductivity of the soil solution were monitored through solution extractor. Two access tubes with 1.05 m length were used, with 7 days difference between installations. The images were captured at 110, 128, 136, 143 and 151 days after harvest cane-plant, in the second cycle (1st cane ratoon), with the Root Scanner CI-600<sup>TM</sup> and were analyzed the number of roots and root length in each layer in different depths in the soil profile by software RootSnap!<sup>TM</sup>. The results show that the highest rates of increase in the number and length of roots were observed in the first 27 days. Absolute growth rates of up to 81 mm day<sup>-1</sup> and 38 mm day<sup>-1</sup> were presented in 0-20 and 20-40 cm layer respectively. The number of roots stabilized from 27 days after installation of the tube, while the length of the root system stabilized between 30 and 40 days. Root growth was more intense in the first two layers (0 to 0.4 m depth) of soil profile, which presented more than 80% of the total root length after the stabilization.