

SALT ACCUMULATION IN POLYTUNNEL SOILS UNDER TOMATO CULTIVATION IRRIGATED WITH SURFACE WATER

Diana Elena BOLOHAN¹, Lucian RĂUS¹

e-mail: rauslucian@uaiasi.ro

Abstract

Tomatoes cultivated in polytunnels require frequent irrigation due to high evapotranspiration rates and intensive production. When surface water from rivers or lakes is used, its elevated mineral content can gradually lead to soil salinization and structural alterations. The accumulation of salts in the root zone negatively affects tomato growth and yield, mainly by reducing water uptake and causing nutrient imbalances. This study investigates salt accumulation in the soil over the course of one growing season in a polytunnel located in Iași County, Romania. Soil samples collected before and after the season confirmed a progressive buildup of salts, highlighting the long-term risks associated with the repeated use of mineral-rich surface water in protected tomato cultivation systems. Every two weeks, analyses of irrigation water samples revealed carbonate concentrations ranging from 0.4 to 0.8 me/L, with maximum values of 2.85 me/L, and bicarbonate concentrations between 2.34 and 5.81 me/L. The results suggest that even within a single cultivation cycle, measurable salinization can occur, potentially predisposing soils to degradation over time.

Key words: carbonates, SAR, soil pH, soil salinity, TDS