

Abstract :

Salinization of greenhouse soils in Palestine, in particular in the Jericho district, is a serious problem facing protected agriculture, mainly due to the excessive use of chemical fertilizers and due also to the inferior quality of irrigation water.

The possibility of using sewage sludge, a byproduct of municipal wastewater treatment processes, as a soil amendment to alleviate salinity stress of saline soils is highly attractive. Sewage sludge is rich in organic compounds and plant nutrients, and it can be considered as a valuable source of N, P, and K that are essential plant nutrients. Accordingly, the reuse of sludge may substitute substantially part of the needed plant nutrients. However, there is a need for ecotoxicological evaluation of the usage of sludge. It is well known that urban sludge is usually non-toxic, whereas sludge from industrial zone might be very toxic. Accordingly, the aim of this study is to assess the impact of amending alkaline calcareous saline soil with sewage sludge on the growth and development of processing tomatoes.

Sewage sludge was obtained from "Al-Bireh Wastewater Treatment Plant" after processing according to the standard procedure, whereas saline soil was obtained from Azubidat area . The processed sludge was incorporated at various ratios and the experimental material was the processing tomato.

Results show that amending sludge to saline soil at ratios of 1: 10 and 1: 6 had positive effects in improving soil conditions and also on plant growth and development . The most important parameter is the consumption quality of tomatoes, which include heavy metals content of fruits, and the degree of contamination of the fruits with pathogens. The main finding is that no contamination was observed, and the concentration of heavy metals is lower than levels considered toxic for humans.

In conclusion, addition of sewage sludge to saline soil alleviates partially the negative impact of salinity stress, in particular at mix ratios of 1: 10 and 1: 6 (sludge: saline soil).