Geophysical Research Abstracts
Vol. 18, EGU2016-1007, 2016
EGU General Assembly 2016

Can Tomato Inoculation with Trichoderma Compensate Yield and Soil Health Deficiency due to Soil Salinity?

Karl Wagner (1), Antonios Apostolakis (1), Ioannis Daliakopoulos (1), Ioannis Tsanis (1,2)

(1) School of Environmental Engineering, Technical University of Crete, Chania, Greece, (2) Department of Civil Engineering, McMaster University, Hamilton, Ontario, Canada

Soil salinity is a major soil degradation threat, especially for arid coastal environments where it hinders agricultural production and soil health. Protected horticultural crops in the Mediterranean region, typically under deficit irrigation and intensive cultivation practices, have to cope with increasing irrigation water and soil salinization. This study quantifies the beneficial effects of the *Trichoderma harzianum* (TH) on the sustainable production of *Solanum lycopersicum* (tomato), a major greenhouse crop of the RECARE project Case Study in Greece, the semi-arid coastal Timpaki basin in south-central Crete. 20 vigorous 20-day-old *Solanum lycopersicum L. cv Elpida* seedlings are treated with TH fungi (T) or without (N) and transplanted into 35 L pots under greenhouse conditions. Use of local planting soil with initial Electrical Conductivity (ECe) 1.8 dS m^{-1} and local cultivation practices aim to simulate the prevailing conditions at the Case Study. In order to simulate seawater intrusion affected irrigation, plants are drip irrigated with two NaCl treatments: slightly (S) saline (ECw = 1.1 dS m^{-1}) and moderately (M) saline water (ECw = 3.5 dS m^{-1}), resulting to very high and excessively high ECe, respectively. Preliminary analysis of below and aboveground biomass, soil quality, salinity, and biodiversity indicators, suggest that TH pre-inoculation of tomato plants at both S and M treatments improve yield, soil biodiversity and overall soil health.