Geophysical Research Abstracts
Vol. 20, EGU2018-16370-1, 2018
EGU General Assembly 2018

Chlorophyll Response to Salinity Stress in Tomato Plants

Natalia Stavrou, George Makaroglou, Ioannis Daliakopoulos, and Ioannis Tsanis
Technical University of Crete, Environmental Engineering, Chania, Greece (daliakopoulos@hydromech.gr)

Salinization poses a great threat to sustainable agriculture, especially in semi-arid coastal environments where the imbalance of water availability and evapotranspiration is pronounced. This study quantifies the effect of saline irrigation (Electrical Conductivity (EC) of 2.0-3.5 dS m^{-1}) and soil substrate of variable degree of initial alkalinity (Sodium Adsorption Ratio (SAR) 1.2-6.0), on total chlorophyll content of greenhouse tomato (*Solanum lycopersicum L. cv Elpida*). Furthermore, two soil amendments, *Trichoderma harzianum* and organic humic acid granule, are tested for their ability to alleviate the salinization stress based on their effect on green biomass vigor. Treatments are tested in a small-scale greenhouse experiment that simulates the cultivation conditions in the RECARE Project Case Study in Timpaki, Greece. Current results and a review of previous findings for various tomato cultivars, show that total tomato plant chlorophyll content reduction is over 2.5% per unit of SAR. Preliminary analysis shows that tested soil amendments may have limited but significant effects only in the case of low alkalinity soil, whereas degraded substrates shadow amendment effectiveness even under low salinity irrigation. Findings highlight the importance of maintaining good soil health for sustainable agriculture.