



Cyprus
University of
Technology

Faculty of Geotechnical
Sciences and
Environmental
Management

Master's Thesis

Application of Biostimulants in tomato plants (*Solanum lycopersicum*) to improve plant growth and stress tolerance under high salt conditions

Stella Gedeon

Limassol, May 2021

CYPRUS UNIVERSITY OF TECHNOLOGY
FACULTY OF GEOTECHNICAL SCIENCES AND
ENVIRONMENTAL MANAGEMENT
DEPARTMENT OF AGRICULTURAL SCIENCES, BIOTECHNOLOGY
AND FOOD SCIENCE

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Approval Form

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Presented by

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Supervisor: Vasileios Fotopoulos, Associate Professor, Department of Agricultural Sciences, Biotechnology and Food Science

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The approval of the thesis by the Department of Agricultural Sciences, Biotechnology and Food Science does not imply necessarily the approval by the Department of the views of the writer.

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ABSTRACT

Under the era of climate change, plants are forced to survive increasingly adverse conditions. Among other environmental stresses plants have to deal with, the increased soil salinity affects the plants, reduces crops production, yielding and productivity. Application of biostimulants on plants are shown to mitigate the deleterious effects of salt-stress, leading to positive results. In the present study, the effect of five different biostimulants in tomato plants growing under salt stress was examined. Biostimulants were applied on growing plants through soil watering, while salt stress treatment (150 mM NaCl) followed. At the end of the experiment, a series of phenotypic observations, agronomic, physiological, biochemical and enzyme activity measurements have been done and also RT-qPCR analysis was performed. Among all the biostimulant formulations applied to the plants, two of the treatments led to the most interesting findings. In specific, Biofertilizer 70%/ Biocompost 30% (Bf70/Bc30) and Biocompost 70%/ Biofertilizer 30 % (Bc70/Bf30) formulations gained interest, since the first one showed increased growth promotion and the second one better defense responses at the time of harvesting, compared to the other treatments and controls. More field trials and a larger number of parameters tested is required to fully understand their exact function and mode of action on plants.

Key words: Abiotic stress, Salinity, Priming, Biostimulants, Tomato.