

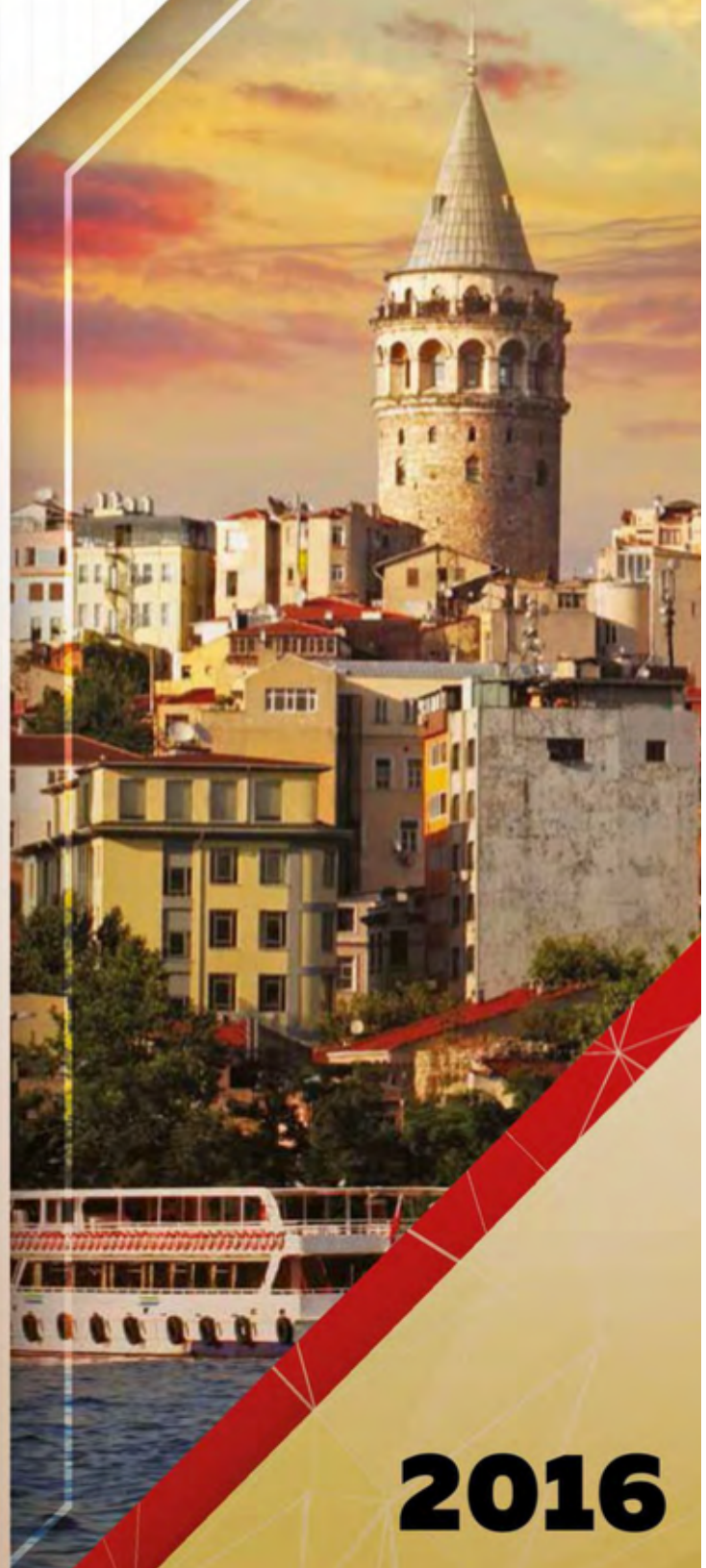


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ABSTRACT BOOK

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Effects of PGPR and Humic Acid Applications on Antioxidante Enzyme Activity and Physiological Parameters of Spinach (*Spinacia oleracea* L.)

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Spinach shoots and leaves are eaten either fresh or after various processes. It is a significant nutrient in human nutrition. Spinach can also uptake significant amount of nitrate from the soil. Therefore, fertilizers used to improve spinach yield and quality should be selected very carefully. The present study was conducted to investigate the effects of PGR + humic acid treatments on yield and nutrient content of spinach. Five different humic acid doses (0, 3, 6, 9, and 12 lt da⁻¹), 2 different PGPR bacteria (*Bacillus megatarium* RC07 and *Bacillus* M3), and 3 different application methods (soil, leaf and soil+leaf) were applied to pots filled with 4 kg of soil. Experiments were conducted in 3 replications in 90 pots. Bacteria were inoculated into PGPR treated plants and then sowing was performed. Humic acid treatments were applied before sowing the seeds to soil, leaf application in four leaves stage. Mineral fertilization was not performed to see the effects of PGR and humic acid treatments on spinach antioxidante enzyme activity and physiological parameters. Initial soil sampling was performed to identify initial physical and chemical soil characteristics. Plants were harvested at the end of experimental period and fresh plant weights, antioxidante enzyme activity and physiological parameters were investigated. Results revealed that PGPR and humic acid treatments increased antioxidante enzyme activity and physiological parameters of spinach plants, specially soil application of PGPR and humic acid.

Keywords: Spinach, humic acid, chlorophyll, PGPR