

## RESPONSE OF TWO TOMATO CULTIVARS TO TRICHODERMA SPP. ASSESSED BY NON-DESTRUCTIVE MEASUREMENTS

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### ABSTRACT

Biofertilizers have great potential to improve crop yields through environmentally save mechanisms. Fungi of the genus *Trichoderma*, as potential components of biofertilizers, have a positive effect on plant growth and inhibit the growth of pathogenic microorganisms through several antagonistic mechanisms. In this study, commercially available tomato genotypes (Narvik and Gruzanski zlatni) and strains of two *Trichoderma* species (*T. afroharzianum* SZMC 25231 and *T. rodmanii* SZMC 25217) were selected to examine the effects of *Trichoderma* spp. on morpho-physiological parameters of tomato plants grown under organic production system. The experiment was conducted in a randomized block design under greenhouse conditions. In total, 15 plants of two tomato cultivars per treatment were transplanted in soil: NC – control Narvik, GZC – control Gruzanski zlatni, NT1 – *T. afroharzianum*; NT2 – *T. rodmanii*; GZT1 – *T. afroharzianum*; GZT2 - *T. rodmanii*. The suspensions of *Trichoderma* isolates were applied in the root zone of tomato plants in the phase of four established leaves. Measurements of relative chlorophyll (Chl), flavonol (Flav) and anthocyanin (Ant) content were performed in vivo on fully developed leaves of the tomato plants using Dualex optical sensor (Force-A, Orsay, France). NBI (Nitrogen Balance Index) was calculated as Chl/Flav ratio. Plant height was measured as a plant growth parameter. Measurements were performed once per week during 35 days of plant growth (5 weeks) and conducted in 10 replications on 10 plants per treatment.

Compared to the control, significant increase of Chl and Flav content was observed on genotype GZ after treatment with both *Trichoderma* species in the 3<sup>rd</sup> and 4<sup>th</sup> week, which resulted in decreased value of the NBI. Also, for the same genotype, *Trichoderma* positively affected plant height. On the other hand, combination of *Trichoderma* and genotype Narvik hasn't showed stimulative effect on examined morpho-physiological parameters. These results indicated genotype-species dependence of tomato-*Trichoderma* interaction. The obtained results indicate that non-destructive measurements with Dualex sensor could serve as starting point to better understand plant responses to *Trichoderma* presence.

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