

## **SHORT- AND LONG-TERM EFFECTS OF *TRICHODERMA HARZIANUM* ON GROWTH, METAL UPTAKE AND FRUIT QUALITY OF TOMATO**

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The short-term effects of *Trichoderma harzianum* on growth, content of chlorophyll and epidermal flavonols and metal distribution was examined in young tomato plants grown in the climate chamber. *T. harzianum* was applied near the root in the phase of sixth established leaves, and plants were grown in a growth cabinet up to the stage of 10 leaves. *Trichoderma* application positively affected growth of tomato plants, and significantly increased content of epidermal flavonols. Also, the significant decrease of Cd in all plant parts was observed. However, content of Cr and Ni was lower only in roots. The primary goal of the examination of the long-term effect of *T. harzianum* was the fruit quality of two commercial tomato cultivars grown in organic system of production in the field under polytunnel. One cultivar had a significant response to *Trichoderma* application. The increase of leaf epidermal flavonols was observed, however as the chlorophyll content decreased, the nitrogen balance index has also decreased, indicating a shift from primary to secondary metabolism. The fruit quality of the same cultivar was improved by increased total flavonoids content, decreased starch, increased Bioaccumulation Index (BI) for Fe and Cr, and decreased BI for heavy metals Ni and Pb. Data indicate that in some cultivars of tomato the interaction with *Trichoderma* contributes to improved health promoting properties of tomato fruit.