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(22nd SPPS Meeting)

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Correlations between ABA content and physiological parameters up to 48 h after *Trichoderma*-Tomato interaction and drought

PP2-5

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At the stage of 4 developed leaves, tomato plantlets (Solanum lycopersicum Mill. cv. Ailsa Craig) were subjected to four treatments: optimal water supply (75% soil water capacity), cessation of watering and cessation of watering with addition of the *T. brevicompactum* SZMC 22661 spore suspension (8 x 10^6 CFU) to the root zone. Measurements of the soil water content (SWC; *Theta* probe), content of chlorophyll and epidermal flavonols (Dualex Scientific sensor), stomatal conductance (Gs; porometer), leaf water potential (ψH2O; pressure probe) and abscisic acid content (ABA; ELISA test) were performed 2, 6, 24 and 48 hours from the onset of treatments.

Plants responded to *Trichoderma* treatment by significant decrease in Gs already 2 h after application. This was coupled with decreased ψH2O and increased ABA content in both leaves and roots. In the same time point, plants that were not watered had high Gs but ABA content has doubled, both in roots and leaves. Plants without *Trichoderma* treatment and those that were treated have experienced drought 24 h and 48 h after the cessation of watering, respectively. Higher Gs of droughted plants that were in contact with *Trichoderma* was in accordance with higher ψH_2O and lower ABA content, both in roots and leaves in comparison to plants without *Trichoderma* treatment.

Keywords: *Trichoderma brevicompactum*, stomatal conductance

Fresh chives in pots on the Belgrade's balconies and terraces How do the urban environmental factors affect their quality?

PP2-6

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Chive (*Allium schoenoprasum* L.) is a small bulbous perennial which is used as a spice plant and as a culinary herb. This plant contains compounds with potent antioxidant activity and has beneficial effect on human health. Chive can be easily grown without special care. Accordingly, it would be the best that people grow spice and healthy plants on their own balconies and terraces to have fresh raw plant like chive every day. The objective of this study was to determine the impact of urban environmental factors on the quality of chives planted at 5 different locations in Belgrade. The

parameters of quality were phenolics profile and heavy metals content, while exposure to stress was determined by measuring the activity of antioxidant enzymes, peroxidases (POX) and superoxide dismutases (SOD) in fresh plants. The phenolics profile of plant aerial parts was characterized by LC-MS/MS. Twelve phenolic compounds were quantified, among which kaempferol 3-*O*-glucoside and quercetin 3-*O*-glucoside were dominant. Positive correlation between POX/SOD activity and concentrations of the forementioned compounds was observed. The concentrations of Cd, Cr, Cu, Pb and Zn in the leaves of investigated chives were measured using ICP-OES technique. The levels of Cd in edible parts of chive at all investigated locations were higher than permissible limit. Mean Cr concentration in leaves of chive was high only in central urban zone. The process of urbanization has been expanded with the negative consequences on plants, which can be seen from increased POX activity and high levels of heavy metals in leaves of chives.

Keywords: *Allium schoenoprasum* L., urban ecosystem, plant phenolics, antioxidant enzyme, heavy metals

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The level of malondialdehyde (MDA), H2O2 and catalase activity in *Hedera helix* leaves at low environmental temperatures

PP2-7

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The leaves of *Hedera helix* are metabolically active throughout the year and are exposed to significant temperature changes. The aim of our work was to investigate several parameters of oxidative stress in *H. helix* leaves in the period of the lowest annual temperatures since oxidative stress is one of the main consequences of plant exposure to low temperatures. We examined the level of malondialdehyde (MDA) and H_2O_2, and catalase activity in the leaves of five *H. helix* plants during the period November 2017- February 2018 at Banja Brdo (Banja Luka). The average monthly temperatures in the research period were: 6.9 °C (November), 4.6 °C (December), 4.8 °C (January) and 0.7 °C (February), while the temperatures at the moment of sampling were 3.7 °C (November), 3.8 °C (December), 6.8 °C (January) and 0.2 °C (February). The results showed a significant increase in catalase activity and H_2O_2 concentrations at lower temperatures. MDA concentration was maintained at a constant level during the study. We noticed that the changes in the studied oxidative stress parameters, in addition to changes in the environment, depend on the biochemical-physiological status of each individual plant. The paper presents results for *H. helix* growth periods with the lowest environmental temperatures, but the main goal is to observe changes in these parameters in comparison with temperature changes during the whole year and different vegetative periods.

Keywords: *Hedera helix*, catalase, low temperature, H_2O_2, MDA