BOOK of ABSTRACTS

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Estimation of physiological stress parameters after exposure of *Miscanthus* × *giganteus* plants to increasing Li concentrations

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Lithium (Li) emerges as a rising ecological problem considering its widespread use and its irreplaceable role in energy storage batteries and in a variety of devices from mobile phones to electric vehicles. Increased concentrations of Li in soil and groundwater derived from tailings of the Li-mines, and improper disposal of Li-ion batteries might have substantial effect on ecosystems. Despite this, the physiological effects of Li accumulation in plants remain underexplored, which limits their practical application in phytoremediation. The main goals of this study were to investigate the potential of *Miscanthus* × *giganteus* to accumulate Li in roots, rhizomes, stems and leaves, as well as to examine effects of accumulated Li on photosynthetic pigment content, membrane stability and redox status. The study showed efficient Li accumulation by *Miscanthus* plants even at the highest Li concentrations, especially in roots and leaves, indicating its possible use in phytoremediation. Exposure to increased Li concentrations led to higher levels of membrane lipid peroxidation (MDA) and greater electrolyte leakage, suggesting harmful effects of Li on cellular integrity. Based on total antioxidant capacity assessment (DPPH) and measurement of antioxidant enzymes activities in leaves and roots, Li exposure slightly modified redox status in *Miscanthus* × *giganteus*. Moreover, accumulated Li led to decrease in chlorophyll a, chlorophyll b and total carotenoid content, indicating negative effects of this element on photosynthetic process.

Keywords: lithium toxicity, antioxidant enzymes, phytoremediation, membrane stability

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