

IMPACT OF POLYPLOIDIZATION ON ABIOTIC STRESS TOLERANCE IN THE TUBER-BEARING POTATO SPECIES *SOLANUM COMMERSONII*

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Polyploidy is particularly widespread in plants (including major crops), where it often results in changes at the genomic, epigenetic, transcriptional and metabolic network levels. Therefore, it largely impacts biological contexts and has several fields of application. Interestingly, previous studies demonstrated that polyploids often show novel phenotypes compared to diploid progenitors, possibly extending their adaptability to stress conditions. As part of a large-scale project to decipher the effects of polyploidization, here we studied whether polyploidization of *Solanum commersonii*, a wild diploid ($2n=2x=24$) potato species, may be directly related to improved stress tolerance. Diploid and oryzalin-induced tetraploid ($2n=4x=48$) plants of *S. commersonii* were subjected to four abiotic stress types (drought, high salt, flooding and increased UV exposure). For each stress treatment and control, leaf relative water content, metabolite content alterations, gas exchange parameters and

various physiological traits were measured. Results provided evidence that drought, salinity and UV exposure impacted traits in a stochastic manner, without a systematic effect of polyploidization. This suggested a genotype-specific effect of polyploidy. By contrast, flooding revealed a significant ploidy x stress treatment interaction for proline, chlorophyll, phenols and malondialdehyde contents, implying that for this stress condition a common response to polyploidization could exist. Further studies are underway to characterize the extent of flooding-induced genomic, metabolomic and proteomic changes in these plant materials, as related to chromosome doubling.

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