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Responses of dragon fruit (*Selenicereus undatus*) to NaCl-Induced salinity stress

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ABSTRACT

Dragon fruit, an obligate CAM species, demonstrates high water efficiency and drought resistance. A pot experiment assessed its response to saline conditions using water with 0, 25, 50, 75, and 100 mM salt concentrations. Under salinity stress, dragon fruit showed changes in shoot and root growth. New shoot production was stable up to 75 mM salinity, with a slight reduction at 100 mM. Compared to the control, shoot production decreased by 13.33% at 75 mM and 33.33% at 100 mM. Increasing salt stress reduced total plant fresh weight, with the highest and lowest values at 0 mM and 100 mM, respectively. A similar trend was observed for plant dry weight, peaking at 0 mM and lowest at 75 mM. Salinity stress significantly decreased chlorophyll content and NDVI in dragon fruit. Plant mortality varied with salinity, reaching 40% at 100 mM and 20% at 50 mM. Salt stress also delayed cutting sprouting by 4-10 days. Higher salinity levels reduced shoot and root biomass, though new shoot formation persisted up to 75 mM, and shoot girth remained unaffected. Notably, root elongation occurred under saline conditions. While salt stress negatively impacted some growth aspects, other indicators showed positive responses. Therefore, investigating genetic variability within dragon fruit populations to identify salt-resistant genotypes is essential.

Keywords: Chlorophyll, mortality, root biomass, salinity, stress tolerance.