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ABIOTIC STRESS EFFECT ON GROWTH AND PHOTOSYNTHETIC CHARACTERISTICS IN EMARATI DATE PALM VARIETIES

by

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Abstract

Plants are naturally exposed to different environmental stresses which affect the growth and development. In the present investigation, five date palm cultivars viz., chichi, kalas, Nabt saif, sultana, zamli were initially screened for their salinity tolerance by measuring the growth parameters such as plant height, fresh and dry weight of shoot and roots. Based on the results obtained, sultana, zamli cultivars were identified as salt tolerant and selected to study the response to future climatic scenarios such as e CO_2, enhanced UVB radiation and UVB+eCO_2 combined effect in Open Top Chambers. After the treatment, photosynthetic pigments (chlorophyll 'a', 'b' and total chlorophyll, carotenoids), biochemical contents (proline, protein, amino acid), proline metabolizing enzymes (γ - glutamylkinase activity, proline oxidase activity, non – enzymatic antioxidants (total phenols, α-tocopherol, reduced glutathione contents) and antioxidant enzymes (polyphenol oxidase, peroxidase, superoxide dismutase, catalase, ascorbate peroxidase activities) were analysed. Based on the results, sultana cultivar is tolerant to future climatic scenarios. However, other a biotic stress and yield parameter are warranted for the identification of biotic stress tolerant date palm cultivars.

Keywords: Date Palm, UVB Radiation, Elevated Level CO_2, Morphology, Antioxidant Enzymes, Stress Tolerant