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Entitled

*RESPONSE OF FIVE CHENOPODIUM QUINOA VARIETIES TO ELEVATED CO₂, UV-B AND
DIFFERENT SALINITY LEVELS*

by

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Abstract

Ecosystems have been affected by devastating climate changes. Both agriculture and environmental changes are correlated with various futures since climate change is the main cause of abiotic and biotic stress which affects crop plants. The climate changes and the severe impact on plant productivity showed great intensities due to the effects of abiotic stress. In the present investigation, five quinoa varieties viz KAUST-05395/CHFN-68 (V1), KAUST-05398/PI-614889 (V2), KAUST-05397/PI-614885 (V3), KAUST-05403/ICBA-Q3 (V4), and KAUST-05399/PI-614888 (V5) were screened for their salinity stress response by measuring the morphological parameters such as total plant height, fresh and dry weight of shoot and roots. V4 and V5 varieties were identified as salt tolerant and selected to study the response to future climatic scenarios such as eCO₂, enhanced UVB radiation and UVB+eCO₂ combined effect in Open Top Chambers. The response of studied Quinoa cultivars were measured by analyzing the photosynthetic pigments, biochemical contents, proline metabolizing enzymes, non – enzymatic antioxidants and antioxidant enzymes activities were analyzed. Based on the results obtained in the present investigation, further study is warranted for screening the more varieties with additions climate change factors such as temperature and humidity to find out more tolerant variety of quinoa suitable for future climatic conditions.

Keywords: Quinoa, Climate change, UVB Radiation, Elevated Level CO₂, Morphology, Antioxidant