

ABSTRACT ONLY

EXPERIMENTAL SIMULATION OF A SOLAR
UV ENVIRONMENT ON MARS AND ITS
EFFECTS ON GERMINATION AND
PHOTOSYNTHETIC PIGMENT CONTENT OF
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Mars exploration has become a human goal in recent years, as the possibility of colonizing this planet opens up space for research and innovation in fields such as astronomy, astrophysics, astrobiology, among others. International agencies have directed their efforts to conduct various reconnaissance missions to Mars, with the aim of not only preparing for future human existence on the red planet but also ensuring food sustainability. Considering the above, this work has the main goal of simulating an experimental environment that replicates the environmental conditions of Mars related solely to solar ultraviolet radiation levels and establishing their effect on the germination and photosynthetic pigment content of *Chenopodium quinoa*. We focused on establishing the effect of these conditions on the germination and photosynthetic pigment content of *Chenopodium quinoa*, in order to make a pilot study for future colonization and subsistence on the planet. It was found that UV radiation stimulates the emergence of seeds from different *Chenopodium quinoa* materials, acting as a directed photomorphogenic signal. Specifically, at shorter wavelengths, the germination percentage was higher compared to normal conditions. Something very similar happened with the plants, where treatments with UV resulted in notable increases in the concentration of total chlorophyll at short wavelengths, showing an “automatic” increase in both materials. Further study of these behaviors in more extended experiments and with materials from other plant species would be worthwhile.

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