

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Astrobiology and Exploration (5)

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FUNGI IN SPACE: WHAT ROLE CAN FUNGI PLAY IN TERRAFORMING MARS?

Abstract

Fungi have played a significant role in the colonization and terraforming of Earth in diverse, sometimes extreme, environments. During Earth's early Paleozoic era soil-dwelling fungi assisted in plant development within the high CO₂ atmospheric environment; provided soil nutrients for plants and are believed to have enhanced growth and development and photosynthetic carbon intake. Additionally there is a causal link between biota and climate through the chemical weathering of silicate rocks suggesting that life to be crucial in cooling and maintaining conditions on Earth. Where terraforming has caught the imaginations of popular culture and scientific research for over hundred years the focus on making Mars habitable has been of increasing interest within the science community, largely because of its atmospheric content and its location relative to Earth. While some focus has previously been drawn to the biological and chemical terraforming of Mars no comprehensive study has yet fully examined fungi as a terraforming agent. This research identifies the role fungi species can play in the terraforming and ecopoiesis of Mars, drawing from terrestrial events and data.