

## THE FUTURE OF ASTROBOTANY IN THE INTERNATIONAL SPACE STATION

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**This paper shows results of Astrobotany experiments carried out in the International Space Station (ISS).**

Astrobotany is a branch of Astrobiology that studies the life and interactions of plants in space environments. This includes the opportunity to use plants as nourishment during space travel and the possibility of the presence of plant life on other planets (Briot, 2013). Since space travel became a reality, different experiments with plants have been developed, from seeds orbiting the moon to germination and full flower development (Wheeler, 2017).

Currently, the ISS has two different equipment for studying plants in microgravity conditions: Veggie and Advanced Plant Habitat (APH). The first one is essentially an open system with little internal environmental control. Vegetable plants grow in the same atmosphere that astronaut crew inhabits, with only lights, air movement, water, and slight containment provided by the device. This makes Veggie an ideal system for studying plant-human-microbe interactions (Massa et al. 2016). The APH is a high-performance chamber that allows monitoring and controlling all the cardinal factors of plant growth: light, temperature, atmosphere, water, and nutrients. It was designed so that researchers can customize the plant growth environment as needed for their investigations (Massa et al. 2016).

The results of these experiments help us to understand the physiological responses of plants during spaceflight and microgravity environments; how to grow plants efficiently to provide a safe, nutritious, and more palatable food source for crews in space,

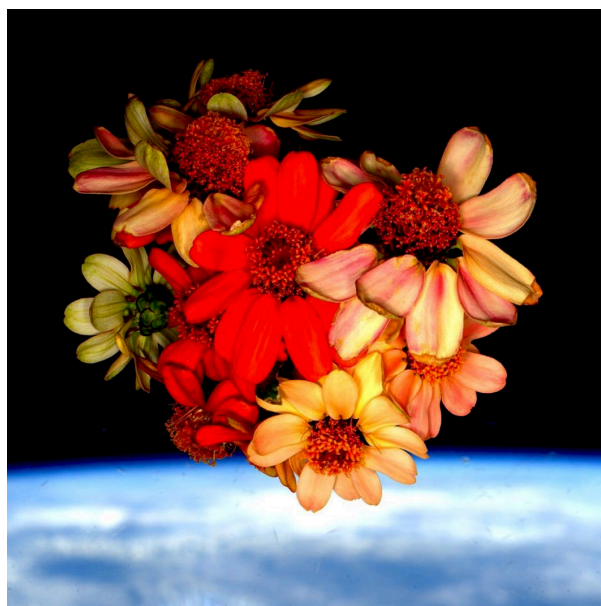


Fig. 1. Bouquet of Zinnias grown on the International Space Station. Credit: Scott Kelly, NASA.

and the possibility of planet habitability scenarios out of Earth.

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### REFERENCES

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