SAGE: Space Astrofarm Greenhouse Enclosure

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A significant problem faced on the International Space Station is the efficiency of growing plants as an edible food source. Growing plants in space is challenging because of the effects of microgravity on the delivery of nutrients to the root system. SAGE is a proposed proof of concept that is an alternative to NASA's current growing systems known as "Veggie" and "Advanced Plant Habitat." SAGE is a modular system that is easily adaptable, is designed with readily accessible parts, and uses significantly less resources than the currently available systems used by astronauts. The purpose of this project is to demonstrate the ability to grow microgreens using a modular system and aeroponic gardening in a microgravity environment. Aeroponic gardening is the practice of growing crops in a mist environment without soil. The advantages of aeroponic gardening are the use of a pinpoint nutrient delivery system, sustainable rapid rate of growth, and interchangeable growing surfaces. This process yields edible nutrient-dense greens every seven days and provides astronauts with a fresh food source. SAGE has the potential to be utilized in future missions to the International Space Station.

Awards Won: