

金融新闻阅读：Plants as Important in Space as on Earth PDF转换可能丢失图片或格式，建议阅读原文

https://www.100test.com/kao_ti2020/503/2021_2022__E9_87_91_E8_9E_8D_E6_96_B0_E9_c92_503259.htm Growing a vegetable garden isn't so difficult, on earth. But a space garden... well, that's another story. Still, as Sheri Quinn reports, plants will likely be an important part of future space missions, not only to sustain the travelers' bodies, but their souls, as well. Plants are a vital part of the earth's eco-system, and they're just as crucial in the artificial environment of an orbiting space station. As on earth, they provide food, and offer a sense of tranquility. Scientists from the U.S. space agency NASA and Utah State University are working with Russian colleagues to figure out how to grow edible plants in space, and understand their psychological value to space explorers. Bruce Bugbee is a professor of plant physiology at Utah State. His lab helps test so-called space gardens. "We now are trying to quantify, how important are they?" he explains, adding that he is not just talking about providing fresh greens for the crew's diet. "Are there people that just don't need plants around and if there are, are those the kind of people we want to be flying? Are those the most mentally stable people or are the most mentally stable people the ones that like plants and like interacting with plants?" In fact, since 2002 the International Space Station has had a small greenhouse garden, called Lada. Named for the ancient Russian goddess of spring, Lada was created to provide green space for the crew during their long flights. It was a collaborative effort by Utah State researchers at the Space Dynamics

Lab and scientists from the Institute for Biomedical Problems in Moscow. The suitcase-sized plot has produced a small but steady supply of fresh produce, mainly peas and a type of fast growing lettuce called mizuna. Scientists use Lada to study how plants grow in microgravity. Space Dynamics Lab engineer Shane Topham says Lada also provides a welcome distraction for crewmembers. "In fact, when the space shuttle a few years ago broke up on re-entry, the crew members who were on the space station were obviously shaken up about that, and one of the things that the Russian space program did to try and calm them down was to assign them more crew time to gardening because they noticed it did have a calming effect. So if they can use that as a psychological tool to help regulate the worry or difficulties psychologically then that's a very good benefit to having plants in space, independent of the food." Now, researchers are working to quantify those psychological benefits. They plan to track the amount of time crewmembers spend tending the garden.

Vladimir Gushin, a psychologist at Russia's Institute for Biomedical Problems, says this kind of study is new and there's not enough data yet to make scientific conclusions. Gushin says confinement on the space station isn't the problem for the crew, it's a lack of stimuli ... things often taken for granted on earth like wind blowing, birds chirping, or seeing a new face. "We have to minimize the cargo on the ship and at the same time keep [the crew] alive physically and mentally." He says green growing plants can make a difference on the ship. "Plants are one of the opportunities that makes them feel something is changing, that nature is with them, a piece of earth is

with them... that gives them the feeling that there is still of piece of earth, of life. From this point, nothing can substitute for plants." The trick is getting the plants to think they are growing on earth with sunlight. In the tiny Lada greenhouse, plants grow upwards towards common household fluorescent bulbs. Instead of soil, theyre planted in a bed of baked clay particles. Since excess water wont drain away in micro-gravity, its meticulously measured and replaced, and air is recycled through filters to remove trace contaminants that are toxic to the plants. The space garden is helping researchers learn more about air quality and agriculture on earth, but the ultimate goal is to grow food in space for long missions to other planets. In fact, Utah State professor Bruce Bugbee looks forward to a greenhouse on Mars. "I think its more than possible, I think its essential," he says. "Theres a point at which you cant possibly bring enough food with you...you can imagine an entire trailer full of bag lunches for a four-year trip to Mars. At some point, its cheaper to bring the whole space farm and solar cells and grow your own food." The next crop to be planted and harvested in orbit will be the grain, barley. The seeds are going up on the next shuttle mission to the International Space Station later this year.

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