

## Students are seeing which plants are edible in space. NASA already has learned from them

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OCTOBER 30, 2019 06:00 AM



Students with Growing Beyond Earth, a partnership between schools, NASA and Fairchild Tropical Botanic Garden, examine the plants growing in the growth chamber. They are testing which edible plants will grow best on the International Space Station.

Last year, a student participating in a Fairchild Tropical Botanic Garden program that is testing which edible plants can grow in space had an idea.

What would happen if you grew short and tall plants together in one planter, utilizing limited space on the International Space Station and giving astronauts a variety of plant-based foods to eat?

NASA liked the idea, began testing it and now the plants are growing together in the Space Station.

“In 2018, we had two separate plants that were successfully grown on the ISS [International Space Station] because of the contributions from schools. By sharing this, we want people to know that their hard work is paying off and is providing tons of important information,” said NASA scientist Trent Smith.

Smith recently spoke to teachers across South Florida who are part of the ‘Growing Beyond Earth’ project, a partnership among NASA, Fairchild and more than 250 schools across the country. More than 100,000 middle and high school students are participating.

The collaboration is aimed at determining which plants can grow in the International Space Station and be used to feed the astronauts. If successful, the plants could be transferred to different planets.

The 5-year-old project has two parts. For the first half of the school year, students follow NASA instructions on how to grow the plants that NASA chose for them. To date, the students have grown on the Space Station dragoon lettuce, which is like Boston lettuce only with thicker leaves and a crisper texture, and Extra Dwarf Bok Choy.

In the second half of the school year, NASA asks students to change one aspect of the experiment. With the large number of schools involved, this allows scientists to collect hundreds of different data sets. The scientists then analyze the data to determine which plants have the best shot at succeeding.

This is what led to growing the short and tall plants in one place.

NASA and Fairchild have also introduced a new version of their 'Growth Chambers,' which emulate the Space Station conditions. NASA engineered the chamber, using 3-D printed parts and a lighting system that has multiple settings. Previously, the chamber's lights only went on or off.

By controlling the lighting, the students and NASA can determine how varying degrees of light can affect the plant's growth.

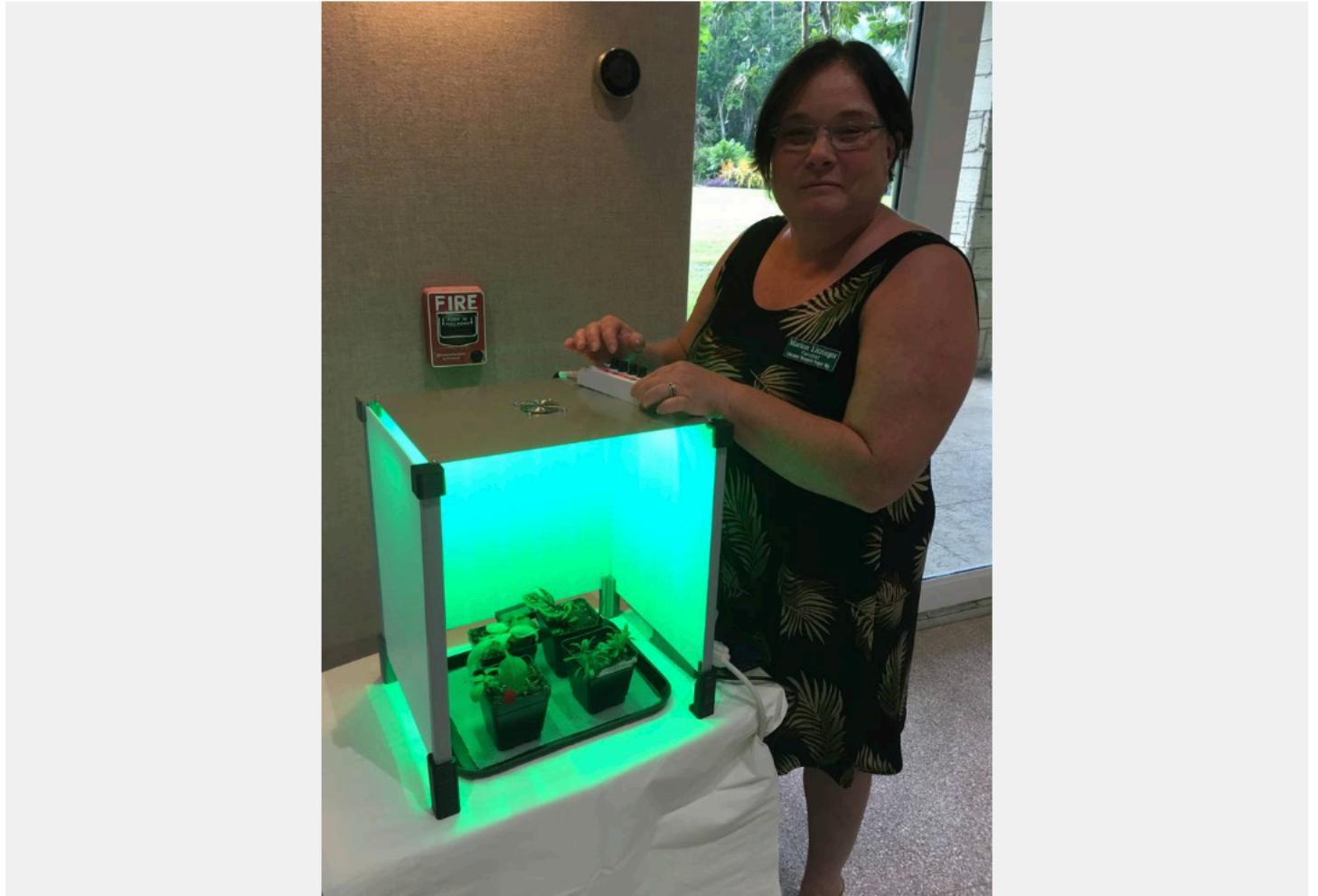
Fairchild has received more than \$2 million in grants to fund the program — \$2 million from NASA and \$250,000 from the Institute of Museum and Library Services, a federal agency.

“Because this partnership was so sudden, for the past four years we have been using simple parts that we could just order online and assemble quickly,” said Carl Lewis, Ph.D., Fairchild's director. “With technology advancing so quickly, we wanted to reflect our hopes to further the project by designing a system unique to the cause.”



Jordan DeWitt, Fairchild's Innovation Studio Specialist, shows teachers how to assemble the growth chamber at a recent workshop at Fairchild Tropical Botanic Garden in Coral Gables. The teachers are working with their students, NASA and Fairchild to learn how to grow edible plants in space. It's part of the 'Growing Beyond Earth' program at Fairchild.





Marion Litzinger, Fairchild's education research program manager, with the growth chamber of edible plants that students are testing as part of a program with NASA and Fairchild.