

# “Water Farming On Mars” And “Bionic Plants” Among Studies For Space Settlement

Dubai’s Future Foundation’s initiative, the Mohammed bin Rashid Centre for Accelerated Research (MBR CAR) has completed 35 scientific studies as part of the Mohammed Bin Rashid Space Settlement Challenge, in collaboration with Guaana, a new scientific research funding platform. Each received up to \$13,500 in funding to deliver their study.

The 35 were selected by peer review among the 275 expert scientists that applied for the funding. Application came in from over 200 universities across 55 countries around the world.

The Mohammed Bin Rashid Space Challenge was launched during a Space Settlement Forum at the World Government Summit in 2018.

Three studies were identified as showing particular promise.

## **Bionic plants**

Conducted by Tara Karimi and Moji Karimi of Cemvita Factory, the first study trialed a technology that replicates photosynthesis: the process by which plants take in carbon dioxide and water and turn it into oxygen and glucose.

According to the study, astronauts typically breathe out 1 kilogram of carbon dioxide every day, which could be collected, processed and recycled into compounds that are useful in space travel.

Given that carbon dioxide also makes up 95% of the Martian atmosphere, this method suggests that space settlements in the future could create their own oxygen, glucose and other compounds from the air around them.

The technology could also be used to reduce carbon emissions to tackle climate change. It could reduce the cost of the company’s currently-used technology to remove carbon dioxide from the air and store it underground at \$100 per ton of carbon to \$30.

## **Farming water on Mars**

In one of the studies supported by the Mohammed bin Rashid Centre for Accelerated Research, Javier Martin Torres of Lulea University of Technology in Sweden extracted water from water vapor using salts found on Mars that absorb moisture from the air at specific temperature and humidity levels and convert it into usable water, known as BOTTLE Water Farming.

The new technology is expected to be critical in addressing economic, environmental and social challenges on Earth.

### **Cooperative 3D printing**

Scientists at the University of Arizona have developed robotic technology that uses solar-thermal energy to produce interlocking pieces for construction. The Cooperative 3D Printing Robot prototype, which combines the capabilities of robotics and 3D-printing technology, is in the process of being patented.

This prototype is a breakthrough for 3D-printing technology, as the modular structure means the size of the printer does not limit the size of the structures it can build. The technology would reduce the cost of construction by human labor by 3-fold and reduce the health and safety risks involved with construction in extreme environments.

<https://forbesmiddleeast.com/water-farming-on-mars-and-bionic-plants-among-studies-for-space-settlement>