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# THE NOPAL, A PROPOSAL TO HARVEST IN SPACE

**Abstract**

In the long term, the scientific objective is to enable plants to produce oxygen, water vapour and provide nutrition for humans in space, whether on board the ISS, during a possible trip to Mars or in a potential human colony in space. The nopales in Mexico are found from the north to the center of the country and reach their greatest complexity and richness in central Altiplano. Each nopalere constitutes, on a regional scale, a universe of plant and animal species that are found only under these particular conditions. It belongs to the genus Opuntía; it owes its name to an ancient town of Greece called Opus u Opuncia, from the region of Leócrida, Beocia, where it is said that a plant similar to cacti grew. To this day, about 220 species are recognized and in Mexico there are between 60 and 90. The complexity of its nomenclature reflects its morphological diversity. The nopal is one of the most important resources of the Mexican flora. Nowadays, due to its various nutritional, chemical, industrial, ecological, medicinal and symbolic properties, among others, the nopal is one of the most important plant resources for the inhabitants of the arid and semi-arid zones of Mexico. The three main structures of nopales for human consumption are: cladodium, tuna and xoconostle. Cladodes or better known as stalks, are stems of thick and waxy cuticle that prevents evapotranspiration. Adaptations; Nopales are native to various environments, from sea level to elevations of more than 4,700 m in the mountains; from tropical regions of Mexico where temperatures are always above 5 C to regions of Canada that have up to -40 C in the winter. A key feature of the nopales is their succulence that manifests itself in various ways: at a morphological level for their thick cladodes and at the anatomical level for its various layers of water storage cells. The proposal consists of sending this vegetable into space, as it is very adaptable and has nutrients that astronauts need to carry out their activities. In addition to that each part of this vegetable can be used to the maximum and it is not necessary to be a professional to start cultivating the nopal.