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METHODS OF SEEDS PLANTING IN SPACE: SOIL-LESS OR NOT

Abstract

Botanists, gardeners, and farmers alike have worked for thousands of years to perfect growth in any environment. Plants and humans are ideal companions for space travel. Amongst many other things for space travel, humans consume oxygen and release carbon dioxide, plants return the favor by consuming carbon dioxide and releasing oxygen. Therefore, space farming's need has been greatly recognized in space travel starting from plants need as human companion to its need for feeding the astronauts. As on Earth, the method of planting seeds for short-term and the proposed long-term space missions require the same basic ingredients for the plants to grow. It takes nutrients, water, oxygen and a good amount of light to get it grown. Astrobotany as the study of plants in space therefore needs to know how to grow them. Space environment is characterized by microgravity or reduced gravity and radiation; and cannot fully support germination, growth and development of plants. Therefore, the most efficient processes for the development of crops in space can be done through closed, controlled or soil-less cultivation systems. To use soil for planting, the soil must have nutrients, moisture, aeration and good structure. The various methods for growing plants in space are discussed extensively in this paper. All that is needed to be done is to select the best method for the proposed destination in space, either in the space station or space laboratory, Moon, Mars, Venus or any other celestial body. These methods discussed include the use of: plant pillows, plant (nutrient) agar, greenhouse, hydroponics, aquaponics, aeroponics, soil amendment etc.