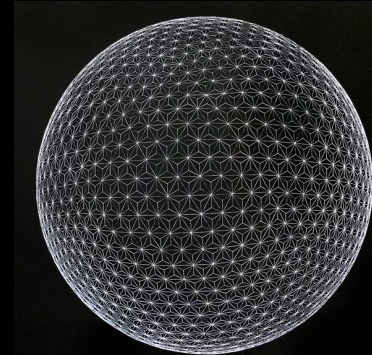


Space Exploration

Habitability

- Mubashshir Uddin
- Sunny K. Bhagat
- Varun Singh



Terraforming

- <https://www.youtube.com/watch?v=peVJ2BtrtuY>
- <https://www.youtube.com/watch?v=FshtPsOTCP4>

Makeshift habitats

- <https://tees.tamu.edu/news/2019/02/building-a-growable-habitat-for-sustainable-life-in-space.html>
- <https://www.universetoday.com/147882/design-for-a-space-habitat-with-artificial-gravity-that-could-be-grown-larger-over-time-to-fit-more-people/>

Space Mining

- <https://www.youtube.com/watch?v=y8XvQNT26KI>
- <https://youtu.be/6Yarhdh0l4A>
- <https://www.milkenreview.org/articles/mining-in-space-is-coming>

Radiation Shielding

- <https://youtu.be/GlYdF7YlX3o> (from 35:00)
- <https://youtu.be/9Uc1VXL3Q7g>

Interstellar Voyage Planning

Hydroponics

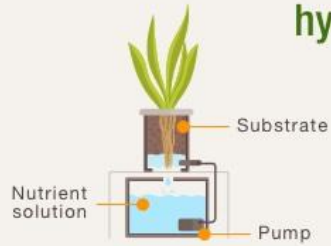
- Involves growing plants without soil, by using nutrients dissolved in solvents
- The nutrients include manure, fertilizers and animal excreta



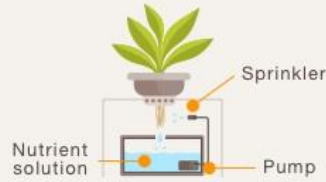
Hydroponics



Types of hydroponic crop systems



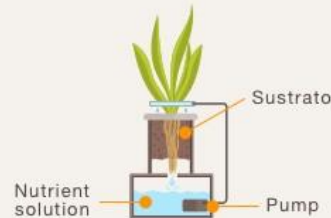
FLOW AND EBB



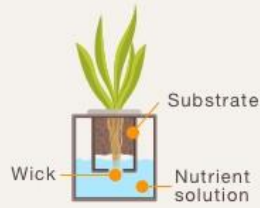
AEROPONICS



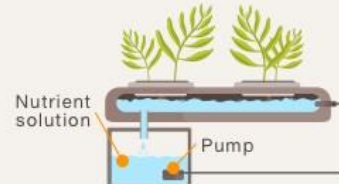
FLOATING ROOT



DRIP



WICK



NFT

Source: Generación Verde.

Advantages

- Since there is no soil, there is no need to worry about having a plot of land, weeds, pathogens living in dirt, or treating the crops with pesticides.
- Water reusability
- Food can be produced all round the year, since we don't have to rely on weather conditions

Farming for Future

- <https://www.nasa.gov/missions/science/biofarming.html>
- <https://www.theverge.com/2018/9/21/17883780/nasa-veggie-plants-space-station-mars-moon-soil-food>
- <https://coruzant.com/opinion/ways-hydroponic-gardening-benefits-space-travel/>

Artificial Gravity

- <https://youtu.be/b3D7QIMVa5s> (Really good video)
- <https://youtu.be/Kbn5Co5iDrA> (In KSP)

Generation Ship

- <https://youtu.be/H2fOWd3zNj0>

Logistics of Generation Ship

- <https://youtu.be/Yfjdrtm1e60>

Fuel Production aboard generation ships

- <https://www.forbes.com/sites/startswithabang/2020/07/28/could-we-achieve-interstellar-travel-using-only-known-physics/?sh=13bf2ba8403a>
- <https://www.youtube.com/watch?v=EzZGPCyrpSU&t=681s>

Habitats on alien worlds

- <https://theconversation.com/heres-how-we-could-build-a-colony-on-an-alien-world-54923>
- <https://youtu.be/XnrVV0w2jrE>