



Summer School

Space Farming - Food for Mars and Moon

Migration to planet Mars or living on our Moon, is it just a daydream or a twilight of the next leap for mankind? With the fast developments in the space science and agrifood domain, it seems this dream is getting closer. But what will we eat when we live on the Moon or on Mars? This summer school aims to bring young people, both students and professionals, together to work on this ambitious topic, by inspiring lectures from experts all over the world and work together on a own experiment and a challenge.

Target group

This summer school is open to students of all levels – BSc., MSc, and PhD – as well as young professionals and researchers. It covers fields from agriculture and plant sciences, space sciences, biology, engineering, and nutrition.

Results

By attending this Online Summer School you will:
Understand from a broad spectrum on space live and crop growth such as regolith ('soil') quality, Crop growth on the regoliths, Needed hardware, external factors influencing plant growth, waste recycling, application of animals and bacteria, rearing insects (mealworms) for food. Get inspired from innovative lectures for future food production, such as vertical farming, algae farming, insects-based food, cell cultured food, 3D food printing, circular agriculture, etc. Build your teamwork and research capability via working on an exited futuristic topic together, with participants have different background from all over the world.
Connect with knowledge experts and like-minded participants

Date	1-12 July 2024
Location	Wageningen Campus

Course leader *Dr. ir. Wieger Wamelink*,
Ecologist and Space Farmer,
Wageningen University &
Research
Dr. Zhen Liu, Programme
Manager Wageningen Academy,
Wageningen University &
Research

Outline and topics

This 2-week summer school programme will be organised everyday with half day lecture and half day group work of experiment. It also includes 2 days of field visits. The following topics will be covered:

- Life outside Earth, possibilities, impossibilities and threats
- Plant growth in space: the challenges
- Crop growth in space under zero gravity
- Plant growth and challenges with the regoliths
- Algae for proteins, medicine and as manure
- Novel food production and processing (3D food print, microalgae, insects, cultured meat, etc.)

Programme

Day 1: Monday 1 July 2024

- **Welcome and introduce of the summer school**
Dr.ir. Wieger Wamelink & Dr Zhen Liu
- **Introduction experiment and challenge**
Dr.ir. Wieger Wamelink
- **Strange new worlds – the Moon and Mars**
Mr. Govert Schilling

Day 2: Tuesday 2 July 2024

- **Life outside Earth, possibilities, impossibilities and threats** *Dr.ir. Wieger Wamelink*

Day 3: Wednesday 3 July 2024

- **Feeding the crew for space missions (Terrestrial analogue & Indoor cultivation of a vegan diet)**
Dr. Cecilia Stanghellini, Esther Meinen and Caterina Carpineti

Day 4: Thursday 4 July 2024

- **Computational fluid dynamics (CFD) for vertical farms: airflows, heat transfer and buoyancy**
Dr.ir. Twan van Hooff
- **Sharing the experiment result of Food for Mars and Moon project in WUR** *Raf Verdaasdonk*

Day 5: Friday 5 July 2024

- **Intercropping on Mars soil simulant and Earth soil- an application on Both Worlds** *Ms. Rebecca Gonçalves MSc*
- **Earth analogue missions like Hi-SEAS & Project of NASA and ESA and their challenges** *Ms. Charlotte Pouwels MSc*

Day 6: Saturday 6 July 2024

- **Whole day trip to some castle(s) and Space Expo in the Netherlands, ended with a joint dinner in Wageningen**

Day 7: Monday 8 July 2024

- **Sustainable bioproduction on Mars: from primary producers to crop production** *Mr. Tiago Pereirinha Ramalho MSc*
- **Excursion to NPEC and Unifarm**

Day 8: Tuesday 9 July 2024

- **Phytoplankton in space: Could microalgae unlock circular food and life support systems**
Dr. Iulian Zultan Boboescu & Antonia Fichtbauer
- **Beneficial microbes inhabiting simulated Martian soil**
Prof.dr. Eiko Kuramae

Day 9: Wednesday 10 July 2024

- **Cell factory** *Dr. Maarten Verhoeven*
- **3D Food printing** *Dr. Lu Zhang*

Day 10: Thursday 11 July 2024

- **Insect rearing: an alternative source of protein in our meals** *Ir. Natasja Gianotten*
- **The lesser mealworm for food security on Mars**
Ir. Lotte Bolander

Day 11: Friday 12 July 2024

- **Group presentations All participants**
- **Wrap up and closing** *Dr.ir. Wieger Wamelink & Dr Zhen Liu*

Practical information



€ 1,850.- per person and covers tuition, course materials, lunch and refreshments.

Early bird fee: Secure your spot at a discounted rate of €1,650.- by registering before May 1st as part of our early bird special.



Max. 40 participants.



Based on your attendance you will receive a certificate after the programme is finished.

Registration

Enrollment is possible until 17 June 2024, or if the maximum number of participants is reached. Register via wur.eu/academy.

Register

Wageningen Academy

We develop and organise courses for professionals, based on Wageningen University & Research expertise.

Contact

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tomorrow's business