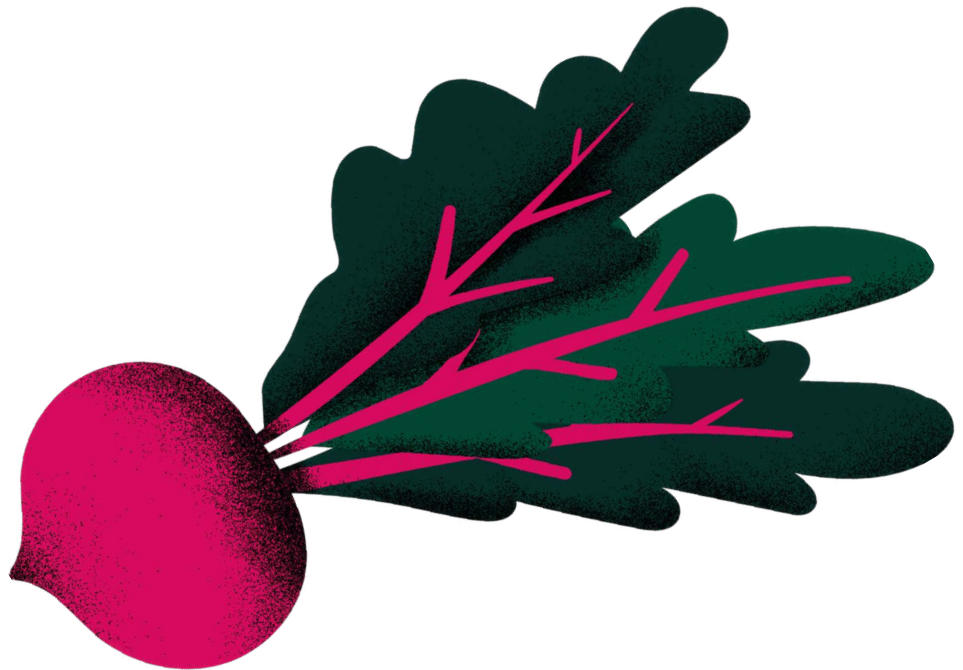


# Future Food

Year 5 – Technologies, Science

Year 6 – Technologies, Science



**(Technologies; Yr 5&6, ACTDEK021)**

Investigate how and why food and fibre are produced in managed environments and prepared to enable people to grow and be healthy

**(Technologies; Yr 5&6, ACTDEP025)**

Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques

**(Science; Yr 5, ACSSU043)**

Living things have structural features and adaptations that help them to survive in their environment

**(Science; Yr 5, ACSHE083)**

Scientific knowledge is used to solve problems and inform personal and community decisions

**(Science; Yr 6, ACSSU094)**

The growth and survival of living things are affected by physical conditions of their environment

**(Science; Yr 6, ACSHE100)**

Scientific knowledge is used to solve problems and inform personal and community decisions

**Cross-curriculum priority**

Sustainability

# Future Food

## Growing food in future environments

This unit challenges assumptions about how food is and should be grown. Students will design a scenario that involves growing food under a futuristic dome or in a heavily built-up urban area. Several sessions introduce them to hands-on activities to help them consider the key elements of their final design and ask: how can good design meet the needs of plants and people?

### Equipment:

Computers for research

Books, articles and human experts to interview about growing food plants

Materials for creating displays or presentations

### Duration:

Several sessions

### Location:

The classroom

### Notes:

## Getting Started

👁 Watch **The One with the Tractor**  
and/or **The One with the Space Food**



- Discuss what students think the future of food production will look like.

### These prompts might help:

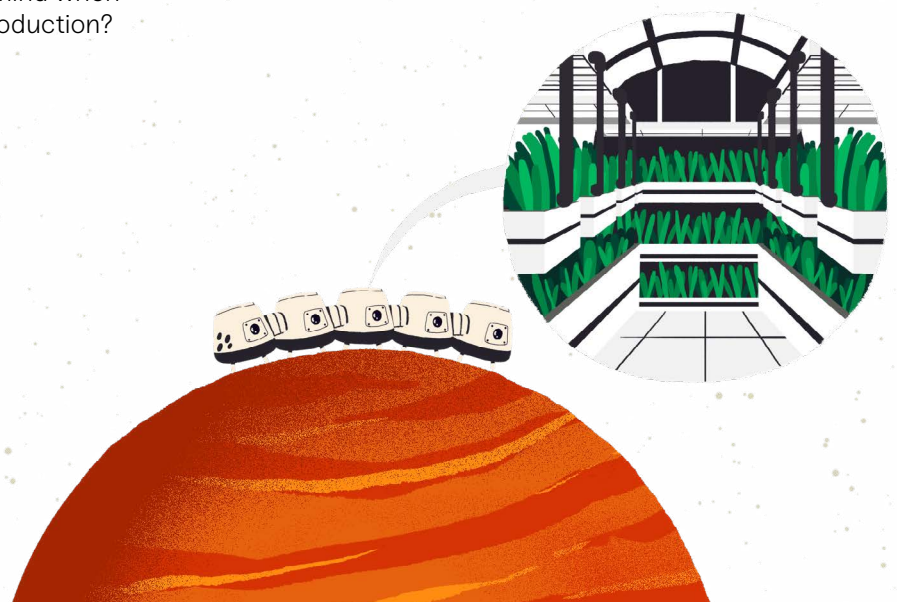
- ? Is all food produced on farms? Where else is food produced?
- ? Are all farms big areas worked by tractors and machines?
- ? Are there other ways vegetables are grown? (e.g. hydroponics, small-scale mixed farming, market gardens and community gardens)
- ? Do we have enough land to feed everyone?
- ? Are there any ethical and environmental considerations we need to keep in mind when designing environments for food production?

## The Scenario

- ? Ask the class: WHAT IF... the environment had degraded to such a point where it was impossible to grow food plants outside on large farms?
- ? How would we feed the world?
- Tell students they are going to work in groups to devise a future food solution.

### Prompt for thoughts on big questions such as:

- ? Where could we grow food if the ecosystem including soil, air and water were ruined?
- ? What could we do to create an environment that meets the needs of plants?
- ? What would be the economic, environmental and social costs of their future food solution?
- ? What specialist knowledge would we need (i.e. people with what skills)?
- ? What science would we use?
- Remind students/ask them to remind you what the needs of plants are:
  - ◇ air
  - ◇ water
  - ◇ sunlight
  - ◇ soil or a growing medium with nutrient in it
  - ◇ an environment to support plants humans will eat (e.g. not too hot, not contaminated, not radioactive).



**Brainstorm with the class the specific scientific knowledge and professional specialists we would need to design a solution. Examples include:**

- ◇ Hydrologists and water engineers to investigate where water will come from, how to clean it, and whether or not we can recycle it.
- ◇ Engineers and architects to help decide how we will build our farm/dome/vertical farm/hydroponic system, etc.
- ◇ Agronomists to focus on the specific needs of food plants and help us maximise crop yields.
- ◇ Soil scientists to survey the properties of the soil, check for contamination and design ways to maximise soil nutrition.
- ◇ Recycling and waste specialists who'll ask: what are we going to do to minimise waste in our future food scenario (i.e. from the growing site, from transport, and in food packaging?)

## Project Preparations

- Divide the class into project groups.
- Remind them of the guiding question:
  - ◇ WHAT IF the environment could no longer sustain the growth of food plants outside? How would we feed the world? What knowledge will we need and what should we try to do?
- Define the project structure such as a class brainstorming session followed by two sessions of group research.
- Ask or assign individual students to choose a career specialty to research and represent in their group (engineering, hydrology, agriculture, horticulture, soil science, human nutrition, waste specialist, etc.) You might like to add to this list!
- Provide groups with time and resources (videos, news articles, websites and books) to help them explore potential future food options.
- Student groups might propose any of the following – or something else – as their solution:
  - ◇ building a bio-dome
  - ◇ urban indoor agriculture
  - ◇ underground agriculture
  - ◇ laboratory food
  - ◇ food replacements
  - ◇ space station farms
  - ◇ indoor hydroponics
  - ◇ vertical farms
  - ◇ ... and what else?
- Groups prepare a presentation\* including diagrams or rough plans, of their proposed solution outlining:
  - ◇ what they propose to do
  - ◇ where they propose it will happen
  - ◇ what some of the risks are
  - ◇ what knowledge and expertise will be needed
  - ◇ any other thoughts (e.g. this project quite often turns into an ethics debate about repairing Earth's ecosystems – not a bad thing!)

\*this could be filmed/created using an online presentation platform such as Prezi.com

**Resources:**

ABC Radio National – Is underwater agriculture the future of food?:

<http://www.abc.net.au/radionational/programs/sundayextra/nemos-garden-is-underwater-agriculture-the-future-of-food/7772278>

Australian Bureau of Statistics – Agriculture Commodities statistics overview 2015-6 (includes video highlights): <http://www.abs.gov.au/ausstats/abs@.nsf/mf/7121.0>

Dezeen – Future Food Domes (includes video): <https://www.dezeen.com/2017/12/06/video-space10-microalgae-pavilion-algae-dome-buildings-movie/>

Dezeen – IKEA lab Space 10 pop-up hydroponic farm: [https://www.dezeen.com/2017/10/04/lokal-space-10-miniature-hydroponic-vertical-farm-london-design-festival/?li\\_source=LI&li\\_medium=bottom\\_block\\_1](https://www.dezeen.com/2017/10/04/lokal-space-10-miniature-hydroponic-vertical-farm-london-design-festival/?li_source=LI&li_medium=bottom_block_1)

Foodtank – 28 Inspiring Urban Agriculture Projects: <https://foodtank.com/news/2015/07/urban-farms-and-gardens-are-feeding-cities-around-the-world/>

Treehugger – 10 Smart Food Solutions for the Future: <https://www.treehugger.com/green-food/ten-tasty-foods-future.html>

Imagine a Building the Grows Food - Australian sustainability innovator Joost Bakker: <https://youtu.be/eWpICyU7Lc4>