CLASSROOM ACTIVITIES

STAGE 3 LESSON one

The science behind growing fruit & vegies

Students learn about the basics of growing fruits and vegetables. They investigate modern solutions to common agricultural problems such as pests, space, quantities, climate change, biodiversity loss and water shortage. They compare current solutions, to solutions of the future.

Learning Outcomes

- **MA3-AR-01** selects and applies appropriate strategies to solve addition and subtraction problems
- **ST3-4LW-S** Describes observable features of living things and their environments
- **ST3-5LW-T** explains how food and fibre are produced sustainably in managed environments for health and nutrition
- **EN3-RECOM-01** fluently reads and comprehends texts for wide purposes, analysing text structures and language, and by monitoring comprehension

Resources and Preparation

Resources

Video (V)

- Video 9 – How do plants grow for kids
- Video 15 – 15 Modern Farming technologies (start at 1:58)

Worksheets (WS) and PowerPoints (PTT)

- Worksheet 13 - Fruit & Veg technologies
- Teacher Information Document (TID)

Materials

- Laptops/computers/tablets with internet
- Classroom poster

Preparation

Prior to lesson:

- Print 1 page per student from WS13

Introduction (10 mins)

Watch V9 with the students to learn about how plants grow. Discuss some (new) concepts (e.g. photosynthesis) with the students and ask them to think about what growing fruit and vegetables looks like on a large scale. What kind of problems do they think they would run into?

Activity (45 mins)

1. Explain the classroom poster to the students, choose which fruit/vegetable the class will use for the Classroom Poster and complete Week 1.
2. Divide the students in groups and give each student in the group a common agricultural problem from WS13.
3. Together, they will go through the questions on the WS13 page, discuss among each other and research the answers about current and future solutions.
4. Watch V15 with the class, to explore some solutions of the future.

Conclusion (10 mins)

Ask each group to share with the class to explain the agricultural problem they explored, what is currently done about it and what could possibly be the 'solution of the future'.

Assessment

For: Students identify and think critically about agricultural problems and possible solutions

As: Students explore possible solutions by themselves

Of: Students correctly summarise the problem and solutions on the worksheet

Differentiation

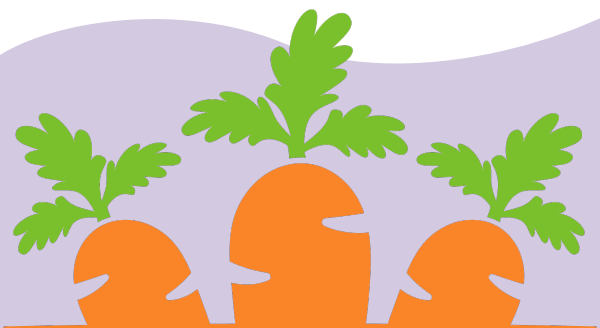
Extend: Before looking up the solutions of the future, have the students design their own solution.

Simplify: Explore the problems and solutions as a whole class

School/Home Link

At home students can explore their fruits and vegetables and explore with their parents/carers what kind of technologies were used to grow it.

Duration | 65 minutes



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Problem 1: Pests

Effective pest control for farms and agricultural premises is essential. Pest species are cause for major concern, not only due to the potential loss of revenue due to crop damage but, if left untreated, they can also cause significant damage to machinery, equipment and property as well. Pest species can include insects, birds and rodents.
You can start your research here: https://www.csiro.au/en/news/all/articles/2021/may/durable-agripest-solutions

Explain the problems pests cause to farms and crops:

What are the current solutions to pests? Are there any major disadvantages?

What are the 'solutions of the future' for solving the problem of pests?

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Problem 2: Irrigation

Irrigation is known to help improve agricultural production. It allows farmers to crow crops in areas with less rainfall than required and to supplement with water in times of drought. However, due to climate change and the following increase in number and duration of droughts, irrigation has becomes a major concern in agricultural crop production.
You can start your research here: https://education.nationalgeographic.org/resource/irrigation/

Explain the problems droughts/lack of irrigtation cause to farms and crops:

What are the current solutions to irrigation issues? Are there any major disadvantages?

What are the 'solutions of the future' for solving the problem of irrigation?

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Problem 3: Lack of agricultural space

One of the major farmers problems has to be the loss of agricultural land, as when more land is lost, it becomes increasingly difficult to produce the right volume of food required to feed the entire population.
You can start your research here: https://www.theguardian.com/news/2019/jan/28/can-we-ditch-intensive-farming-and-still-feed-the-world

Explain why there is a lack of agricultural space and what the consequences are.

What are the current solutions to lack of space? Are there any major disadvantages?

What are the 'solutions of the future' for solving the problem of agricultural space?

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Problem 4: Climate change

Climate change can disrupt food availability, reduce access to food, and affect food quality. For example, projected increases in temperatures, changes in precipitation patterns, changes in extreme weather events, and reductions in water availability may all result in reduced agricultural productivity.
You can start your research here: https://www.wri.org/insights/4-ways-farmers-can-adapt-climate-change-and-generate-income

Explain what effects climate change has on agriculture

What is one current solution to a agricultural problem cause by climate change?? Are there any major disadvantages to this solution?

What are the 'solutions of the future' for solving an agricultural problem caused by climate change?

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Problem 5: Loss of biodiversity

Our global food system is the primary cause of biodiversity loss, with agriculture alone being the identified threat to 24,000 of the 28,000 (86%) species at risk of extinction. As agriculture fields cover about one third of the habitable land, that doesnt leave much space for species that need other plants and trees to survive.
You can start your research here: https://foodprint.org/issues/biodiversity-and-agriculture/

Explain what effects agriculture has on biodiversity and why this is a problem.

What is one current solution to biodiversity loss due to agriculture? Are there any major disadvantages to this solution?

What are the 'solutions of the future' for solving biodiversity loss caused by agriculture?