Key Stage 4 – Food Security in the Future

Notes for teachers

At a glance

With the population estimated to reach 9-10 billion and with 50% of arable land expected to be salinized by the year 2050, there are serious concerns about food security in the future. In addition to population growth and climate change, issues of changing dietary preferences, pollinator loss, pest and disease control, and conflict all present major concerns.

The security of future food production is therefore reliant on research and innovation. For example, at the University of Oxford, scientists are examining the potential function of a specific protein involved in drought and salt resistance. Understanding the function of such proteins may result in the production of genetically engineered crops that remain photosynthetically active throughout times of drought and in salinized soil, and so may result in more reliable harvests.

In this activity, students will be introduced to and encouraged to consider some of the major threats to food security in the future. Students will then conduct independent/group research to investigate these issues further and produce a short presentation outlining their research and its implications.

Learning Outcomes

- Understand threats to future food security
- Data handling skills
- Develop ICT and presentation skills

www.oxfordsparks.ox.ac.uk/content/hardy-crops-tackle-food-insecurity
Each student will need

- A copy of the student worksheet
- Computer/device and access to the internet

Possible Lesson Activities

1. Starter activity
   - Ask students to predict why scientists are predicting food shortages in the future. Get students to list and share ideas.
   - Review by showing Global Food Security issues animation (see web links below). Try to elicit ideas of climate change, loss of agricultural land, increasing population, loss of pollinators, changing dietary preferences (more meat consumption), pest and disease control, water shortages, and conflict.

2. Main activity: Food security summit presentation
   - Hand out student worksheets and encourage students to read through short introduction.
   - Stimulate ideas by showing video clips on key issues surrounding food security. Do not worry about students making detailed notes at this stage as the video links are included in their worksheets.
     - Suggested video clip order:
       1. Global Food Security issues animation: [https://www.youtube.com/watch?v=0emw7IkFdK8](https://www.youtube.com/watch?v=0emw7IkFdK8)
       2. Oxford sparks animation on Hardy Crops: [https://www.oxfordsparks.ox.ac.uk/content/hardy-crops-tackle-food-insecurity](https://www.oxfordsparks.ox.ac.uk/content/hardy-crops-tackle-food-insecurity)
       3. BBC Tech video on insect pollination for crops: [https://www.youtube.com/watch?v=nTVOH8-xb1I](https://www.youtube.com/watch?v=nTVOH8-xb1I)
       4. Kurzgesagt – In a Nutshell animation on meat consumption: [https://www.youtube.com/watch?v=NxvQPzrg2Wg](https://www.youtube.com/watch?v=NxvQPzrg2Wg)
       5. BBC Planet Earth II locust clip: [https://www.youtube.com/watch?v=AYPGOoiy8g](https://www.youtube.com/watch?v=AYPGOoiy8g)
   - Provide students with access to the internet to allow further research.
   - Students are to produce a short presentation on the potential future risks to food security. Students should imagine they are presenting to policy makers with little expertise on the subject. Their presentations should therefore aim to outline and explain the issues and present some policy ideas to safeguard future harvests.

3. Plenary
   - Presentation by groups of their research and policy suggestions.
Web links

- Oxford sparks animation on Hardy Crops: https://www.oxfordsparks.ox.ac.uk/content/hardy-crops-tackle-food-insecurity
- Kurzgesagt – In a Nutshell animation on meat consumption: https://www.youtube.com/watch?v=NxvQPzrg2Wg
- BBC Planet Earth II locust clip: https://www.youtube.com/watch?v=AYPGooijy8g
- BBC Tech video on insect pollination for crops: https://www.youtube.com/watch?v=nTVOH8-xb1I
- Global Food Security issues animation: https://www.youtube.com/watch?v=0emw7lkdK8