Thematic STEM Debate 2021

Primary Sector

From Field to Fork: Genetically modified food

Theme: Genetically Modified Food

A. Introduction

In 1994, the first genetically modified (GM) food, a tomato that will remain fresh longer, was developed by Calgene Inc., a biotechnology company based in the United States. The GM tomato was then sold in supermarkets throughout the United States. The first GM food gave rise to a continuing debate over GM food products around the world.

Genetic engineering is changing the food we eat. While some scientists see great potential in GM products others see uncertainty, even hazards. So, what are GM foods? Who consumes GM food? What do we know about their benefits and their risks? What effect might GM plants have on the environment? Can GM foods help feed and preserve the health of the Earth's growing population? These are some questions asked when debating the theme: Genetically Modified Food.

According to the World Health Organisation (WHO), GM foods are foods that have been modified in a way that does not occur naturally. This is done by changing the genes of a living thing to alter its characteristics/properties. Some of the most common GM food/crops are soybeans, corn and cotton. Benefits of genetic modification is the ability to create food that has a longer shelf-life, is more resistant against disease, pests and drought and as a result could lead to less use of pesticides, water and fertilizers. However, genetically modified foods can also lead to unpredictable changes with harmful effects. Some of these unwanted effects are allergic reactions, reduced nutritional value and release of toxins to the soil.

GM foods have resulted in a public debate in many parts of the world. The issues being debated mainly focus on health and safety, costs and benefits. Labelling of GM food is an example of one of the most controversial issues. The outcome of these debates usually differ from country to country and it is not easy to find a worldwide consensus.

B. Potential debate questions

1. How informed/aware are you about the food/food products you consume?
2. What are genetically modified (GM) foods?
3. What type of information is found on food products? Do you consume GM food?
4. What arguements are there for and against GM foods?
5. Why were GM foods invented/created? Are GM food products necessary? Can we live without them?

C. Links for further reading and research

Below are further links to articles and videos on genetically modified food products.

Genetically modified food facts for kids - (Kids Encyclopedia Facts)
https://kids.kiddle.co/Genetically_modified_food

What is genetically modified food? – (BBC What's New)
https://video.link/w/dMDCc

GM Crops – (FuseSchool – Global Education)
Growing GM crops is a partial solution to the problem of an increasing population because GM crops tend to have higher yields than conventional crops.
https://video.link/w/5MDCc

Altered Food, GMOs, Genetically Modified Food – (National Geographic)
Here's what you need to know about the warming planet, how it's affecting us, and what's at stake.
https://www.nationalgeographic.com/environment/article/food-how-altered

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GMOs: Good or Bad for the Planet? - (Scholastic)
What's the truth about genetically engineered foods?
https://www.scholastic.com/teachers/articles/teaching-content/gmos-good-or-bad-planet/

Why are GMOs bad? – (SciShow)
They aren't. They just aren't, not intrinsically, and certainly not for your health.
https://video.link/w/JODCc

The real problem with GMO Food – (Our Changing Climate)
https://video.link/w/pRDCc

Should we embrace GM food? – The five-minute debate
Green party leader Natalie Bennett and Johnjoe McFadden, a professor of molecular genetics at the University of Surrey, debate the future of food production. Has enough evidence been gathered on the safety of GM? Has the economic case been made? And is opposition to GM merely superstition, as some scientists claim? – (The Guardian)
https://video.link/w/ERDCc

Can we create the "perfect" farm? - Brent Loken – (Ted-Ed)
Explore the innovative ways countries are revolutionizing farming to ensure we can feed humanity in a way that works with the environment.
https://video.link/w/eSDCc

Grow and eat your own vaccines? – (University of California)
The future of vaccines may look more like eating a salad than getting a shot in the arm. UC Riverside scientists are studying whether they can turn edible plants like lettuce into mRNA vaccine factories.
https://www.universityofcalifornia.edu/news/grow-and-eat-your-own-vaccines

D. Links to suggested GMO-related organisations

Below is a hyperlinked list of suggested GMO-related organisations, for further research.

- The Non-GMO Project – Everyone Deserves an Informed Choice
- Organic Consumers Association
- Monsanto Company
- Just Label It
- European Food Safety Authority
- Centre for Food Safety
- Syngenta Global
- Institute for Agriculture and Trade Policy
- National Academy of Sciences
- International Service for the Acquisition of Agri-biotech Applications

This document has been compiled by the Primary Science Team (Science Centre, Pembroke).