

## **Committee: Environment Committee**

### **Topic: The question of the use of GMOs for global food security**

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## **Summary**

With a constant increase in the population, the question arises if we will be able to provide an adequate amount of sufficient and healthy food for everyone. Hence, methods such as selective breeding have been practised since approximately 8000 B.C.E. Thus, a wide variety of methods have been created to increase the supply of food, with an increase in demand. In 1982, FDA approved the first consumer GMO product developed through genetic engineering: human insulin to treat diabetes (Science and History). Most nations have already now made the production of Genetically Modified Organisms legal and have allowed these products to be purchased.

However, GMOS are seen as controversial and must go through a complex risk assessment process, to verify that there is only a minor risk involved with the consumption. "Most of the GMOs authorised in the EU are used to feed farm animals, but some imported food might also contain them. The EU food labelling system obliges companies to indicate if the food or feed they produce contains GMOs. This applies when GMOs account for at least 0.9% of the food or the feed. Companies also have the option to indicate on a label that their product does not contain GMOs. (Eight things)"

In recent years, a multitude of concerns regarding GMOs have become known, such as but not limited to: "Genetic engineering allows, for the first time, foreign genes, bacterial and viral vectors, viral promoters, and antibiotic marker systems to be engineered into food. These genetic "cassettes" are new to the human diet and should be subject to extensive safety testing. Instead, in 1992 the U.S. Food & Drug Administration (FDA) ruled, without any scientific basis, that genetically engineered foods present no different risks than traditional foods. FDA's own scientists ridiculed this unscientific agency's view of genetic engineering.( GE Food)" In other words, the concerns arise from the six major concerns, where significant amounts of evidence were found: Causing Cancer, Allergic Reactions, Antibiotic Resistance, Immunosuppression,

having severe amounts of Toxins, and leading to a decrease of nutrition levels contained in the product, if GMOs were utilised (GE Food).

## Definition of Key Terms

**GMOS** - Genetically Modified Organism

**Transgenic** - “Transgenic refers to an organism or cell whose genome has been altered by the introduction of one or more foreign DNA sequences from another species by artificial means. Transgenic organisms are generated in the laboratory for research purposes. (Transgenic)”

**CRISPR-Cas9** - “CRISPR-Cas9 is a unique technology that enables geneticists and medical researchers to edit parts of the genome by removing, adding, or altering sections of the DNA sequence. It is currently the simplest, most versatile, and precise method of genetic manipulation and is therefore causing a buzz in the science world. (What is CRISPR-Cas9?)”

**Gene Silencing** - “Gene silencing is the regulation of gene expression in a cell to prevent the expression of a certain gene. Gene silencing can occur during either transcription or translation and is often used in research. (Gene Silencing)”

## Background Information

As previously mentioned, trying to increase the supply of food has been a concern, which has been present for a long time. However, genetics have been initially modified since approximately 1866, this is when an Austrian Monk, named Gregor Mendel, has successfully created a method of breeding two different types of peas. In 1922, the first genetically modified corn plants were produced and sold. In 1986. The US government Coordinated Framework for the Regulation of Biotechnology. This policy describes how the U.S. Food and Drug Administration (FDA), U.S. Environmental Protection Agency (EPA), and U.S. Department of Agriculture (USDA) worked together to regulate the safety of GMOs. In the 1990s the first wave of GMO produce created through genetic engineering became available to consumers: summer squash, soybeans, cotton, corn, papayas, tomatoes, potatoes, and canola. Not all are still available for sale (Science and History).

## Major Countries and Organisations Involved

**European Union-** “Most of the GMOs authorised in the EU are used to feed farm animals, but some imported food might also contain them. The EU food labelling system obliges companies to indicate if the food or feed they produce contains GMOs. This applies when GMOs account for at least 0.9% of the food or the feed. (Eight Things)

**United States of America** - “The U.S. Food and Drug Administration (FDA), U.S. Environmental Protection Agency (EPA), and U.S. Department of Agriculture (USDA) ensure that GMOs are safe for human, plant, and animal health. (How GMOS)”


**Peoples’ Republic of China** - “The approved varieties are only allowed to be grown in designated areas, namely parts of Gansu, Inner Mongolia, Yunnan and Hubei, according to licences issued to the breeders published by the ministry of agriculture in December (6 Things)”


## Timeline of Events


**FEED YOUR MIND**


# A TIMELINE OF GENETIC MODIFICATION IN MODERN AGRICULTURE


For thousands of years, people have worked to improve crops, livestock, and the foods we eat. In the 20th century, scientists found a way to modify food faster and more precisely by changing an organism's DNA. This process, called genetic engineering, produces genetically modified organisms (GMOs). This timeline highlights key dates in the development of GMO foods.


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**1940**  
Plant breeders learn to use radiation or chemicals to randomly change an organism's DNA.
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**1953**  
Building on the discoveries of chemist Rosalind Franklin, scientists James Watson and Francis Crick identify the structure of DNA.
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**1973**  
Biochemists Herbert Boyer and Stanley Cohen develop genetic engineering by inserting DNA from one bacteria into another.
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**1982**  
FDA approves the first consumer GMO product developed through genetic engineering: human insulin to treat diabetes.
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**1986**  
The federal government establishes the Coordinated Framework for the Regulation of Biotechnology. The policy describes how FDA, USDA, and EPA work together to regulate the safety of GMOs.
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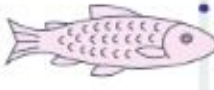
**1992**  
FDA policy states that foods from GMO plants must meet the same requirements, including the same safety standards, as foods derived from traditionally bred plants.
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**1994**  
The first GMO produce created through genetic engineering—a GMO tomato—becomes available for sale after studies evaluated by federal agencies proved it to be as safe as traditionally bred tomatoes.


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**1990s**  
The first wave of GMO produce created through genetic engineering becomes available to consumers: summer squash, soybeans, cotton, corn, papayas, tomatoes, potatoes, and canola. Not all are still available for sale.
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**2003**  
The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations develop international guidelines and standards to determine the safety of GMO foods.
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**2005**  
GMO alfalfa and sugar beets are available for sale in the U.S.
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**2015**  
FDA approves an application for the first genetic modification in an animal for use as food, a genetically engineered salmon.
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**2016**  
Congress passes a law requiring labeling for some foods produced through genetic engineering and uses the term "bioengineered," which will start to appear on some foods.
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**2017**  
GMO apples are available for sale in the U.S.
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**2019**  
FDA completes consultation on first food from a genome edited plant.
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**2020**  
GMO pork production is available to U.S. consumers.
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**2020**  
Application for GalSafe pig was approved.

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Get more information about GMOs at [www.fda.gov/feedyourmind](http://www.fda.gov/feedyourmind).



## Relevant UN Treaties and Events

### Geneva Convention

- “Key issues of concern for Parties and stakeholders with respect to access to information, public participation in decision-making and access to justice regarding LMOs/GMOs

- Challenges encountered in the implementation of the Aarhus Convention and its Almaty Amendment on GMOs, the Lucca Guidelines on GMOs, and Article 23 of the Cartagena Protocol on Biosafety as well as good practices and innovative tools to address them
- Opportunities for cooperation and capacity building
- Priorities for future work (GMOs)”

The Geneva Convention is the only current treaty, which is not outdated, and above are the key points summarised by the UN.

## Previous Attempts to solve the Issue

Bearing in mind that GMOs are not necessarily considered an issue, some relevant parties involved, such as but not limited to the United States, believe that nothing more must be done. However, the European Union has been working on getting guidelines, which are acceptable to solve the issue, but they also want to ensure that all citizens get adequate amounts of nutritious foods.

The responsible government body of the United States has published research aiming to prove to people that GMOS are harmless. Whilst the European Union has published significant amounts of research stating otherwise.

## Possible Solutions

1. Creating a clear consensus of all the information which was correctly gathered, and then work on getting all parties involved to agree on the further utilisation of GMOs
2. Potentially creating a task force, fully funded by the United Nations which will focus on the following
  - a. How GMOs should be used
  - b. To what extent the GMOS can be consumed
  - c. A method to quickly distinguish if GMOs were used whilst manufacturing the product.

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