

BIGMUN 2023

GA6: Legal

Research Report

Topic 3: Discussing the legality of genetic engineering



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Introduction:

Genetic engineering is the process of transmuting the DNA in an organism's genome which could be a base pair or an entire region. During the beginning of the 1970s first experiments on genetic engineering were made on bacteria. DNA could be extracted from other organisms to be transplanted into another organism or removed entirely. Genetical engineering is commonly used in agriculture, industrial biotechnology and medicine. Genetical engineering is used for insulin medicine, longevity in shelf life and various other reasons to increase human health and the country's economy. Due to the scientific consensus throughout the nations that food made from genetically engineered crops are not more dangerous than food made from traditional crops, since the first regulation in 1975, the UN does not have strong regulations on the topic. Genetic engineering is a new technological advancement that should be regulated before new advancements that might endanger human life are made.

Definition of Key Terms:

Base pair:

A single pair of genes in a genome (A-T or C-G).

GMO:

Genetically Modified Organism means any organism with the exception of human beings that possesses a novel combination of genetic material obtained through the use of modern biotechnology.

Cross pollination:

The process of applying pollen from one plant to the ovary of another plant.

Arable:

Land used or suitable for growing crops.

AGS:

Alpha-gal syndrome is a serious, potentially life-threatening allergic reaction which occurs after people eat red meat or are exposed to other products containing alpha-gal.

Pesticide:

A substance used for destroying organisms that are harmful to cultivated plants.

Background Information:

1866 Gregor Mendel's experiment: Gregor Mendel was a monk in Austria and was the first person recorded who experimented with genetic and genetical engineering. During his experiment, Mendel cross pollinated peas with different attributes and observed the results. His research plants the seeds of selective breeding, botany and genetics.

1973 First developments regarding genetic engineering: Biochemists Stanley Cohen and Herbert Boyer were the first scientists to run experiments regarding genetic engineering. They extracted a set of genes from one bacteria and implemented it in another. This experiment became the very basis of genetic engineering. Many medicines like the human growth hormone and hepatitis B vaccine were based on their work.

1994 The first GMO produce was created: The first GMO produce was the Flavr Savr tomato. The Flavr Savr tomato was commercialized by Calgene, Inc situated in Davis, California. The tomatoes were modified so that they would stay firm after harvest and remain more on the vine. After the Flavr Savr, a wave of GMO produces which included corn, cotton, potatoes and many more flooded the market.

2003 Developments by WHO and FAO: After 30 years after the first experiment regarding GMOs the World Health Organisation and Food and Agriculture Organization decided upon creating guidelines regarding genetically engineering products. These regulations were meant to create a framework and standardise GMOs which would help countries produce healthy genetically engineered products.

Major Countries and Organisations Involved:

United States of America (USA): The USA is the country with the most GMO produces being produced. GMOs like cotton, papaya and potatoes are being cultivated over 71.5 million hectares of land which translates to roughly 50% of the total arable land. The United States are highly in favour of GMOs as they have encouraged many scientific discoveries and research including the GalSafe pig. The GalSafe pig is planned to be the first mammal that is being genetically engineered for consumption. It is planned that the pig would decrease the possibility of meat based allergies such as AGS.

Greenpeace: Greenpeace is one of the world's largest NGOs working in favour of stopping climate change. The Greenpeace website states that “Genetically modified (GM) crops encourage corporate control of the food chain and pesticide-heavy industrial farming..” regarding GMOs. Greenpeace is greatly against GMOs and has been working against them by exposing GMOs to the public and explaining their dangers to the world and farming communities. Greenpeace highly encourages the UN to write new and improved regulations regarding GMOs and their usage as biomass and for biofuel production.

Brazil: Brazil is the second country which produces GMO produce. Brazil heavily specializes in the growth of soybeans, maize and cotton having 52.8 million hectares of land fertilised with such plants. Brazil has done much research regarding pesticide usage in farming agriculture. This research has shown that overt usage of pesticides could harm the growth of certain GMOs such as soybeans. The research conducted in 2017 shows that the highest rate of increase in pesticide usage was in soybeans which caused a major drop in productivity.

WWF: WWF also known as the World Wildlife Fund aims for a future where humans and nature can live in harmony without interfering with each other's lives. WWF does not endorse GMOs and advocates the retention of nonGMO options for all relevant commodities. They support a cautious approach to environmental, economic, and social repercussions as well as open monitoring of these effects. Before approving a GMO in a nation, WWF requires and expects governments and authorised government bodies to conduct a thorough case-by-case risk

assessment procedure. WWF also wants ongoing monitoring of the effects of GMOs, particularly how they compare to other types.

Relevant UN Resolutions:

The Aarhus Convention's GMO amendment: During the Aarhus Convention on May 25-27 an amendment was made but was not adopted as it didn't receive enough ratifications. Currently, the amendment awaits one more ratification from the countries which were the party at the convention the amendment was proposed.

Lucca Guidelines on GMOs: The Lucca Guidelines were initially established on 21-23 October 2003. These guidelines were aiming to bring clearance upon the access to information, public participation and to justice concerning genetically modified organisms.

Cartagena Protocol on Biosafety: The Cartagena Protocol aims to contribute to ensuring the safe transfer, handling and use of GMOs. In order to maximise synergy and prevent effort duplication, the Parties to the Aarhus Convention recognised the importance of collaborating with other international organisations and forums, particularly the Cartagena Protocol on Biosafety to the Convention on Biological Diversity. This included encouraging information sharing and teamwork between the respective secretariats.

Previous Attempts to Solve the Issue:

The Cartagena Protocol on Biosafety which was signed in 2003 was one of the biggest attempts to solve the issue. The protocol mainly attempts to solve the problem regarding the biodiversity of plants and other organisms due to the massive increase in GMOs. The treaty was signed both by Brazil and the United States of America and helps countries import and export GMOs and technology used for GMO production under the right guidelines. The protocol still lacks in many areas and should be repaired before it is too late.

Possible Solutions:

The issue regarding GMOs is a very difficult task to solve as it is very recent and has not been researched entirely. As researchers who are interested in the topic increase it is important to maintain strong guidelines which will be updated for current and future research. Although the Cartagena Protocol aims to provide these guidelines it is still lacking in areas like product labelling, food safety concerns and products which were derived from GMOs. The Protocol also lacks regarding shipments as it has been established to regard the first shipment and not all. It is of great importance the community tackles these issues as they are major safety concerns of the public and could cause mishaps in the future.

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