

General Assembly 3 – Social, Humanitarian and Cultural

The question of the production of Genetically Modified Foods



Forum:	General Assembly 3 – Social, Humanitarian and Cultural
Issue:	The question of the production of Genetically Modified Foods
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Introduction

Sub-heading 1

We live in a world of constant change where scientific developments have the potential to tackle a myriad of problems we face. Many of these have affected the agriculture industry over the past years. Genetically modified organisms (GMOs) are used widely by farmers across the globe, and are the source of genetically modified foods (GM foods). In agriculture, GM foods refer to crops that are given new traits for various reasons including the resistance to diseases. They are produced through genetic engineering whereby the DNA of organisms is modified. There is great controversy on safety of GM food production as to whether the production is harmful to humans. Nevertheless, GM foods are potentially a solution to feeding the global population increase which makes this topic extremely controversial.

Definition of Key Terms

Cash crops

The Cambridge Dictionary defines a cash crop as “a crop that is grown mainly to be sold, rather than used by the people who grew it or those living in the area it is grown in.”
(Cash crop)

Coexistence

“Coexistence refers to the choice of consumers and farmers between conventional and GM crop production. The possibility of adventitious presence of GM crops in non-GM crops cannot be excluded. Therefore, suitable measures are needed during cultivation, harvest, transport, storage and processing to ensure coexistence. Coexistence pursues the

aim to achieve a sufficient segregation between GM and non-GM production.” (Coexistence of Genetically Modified Crops with Conventional and Organic Agriculture)

Food safety

“Food safety refers to the conditions and practices that preserve the quality of food to prevent contamination and food borne illnesses”, as stated by the University of Maryland Medical Centre. (Food safety)

Genetically modified foods (GM Foods)

“Genetically modified (GM) foods are foods derived from organisms whose genetic material (DNA) has been modified in a way that does not occur naturally, e.g. through the introduction of a gene from a different organism. Currently available GM foods stem mostly from plants, but in the future foods derived from GM microorganisms or GM animals are likely to be introduced on the market. Most existing genetically modified crops have been developed to improve yield, through the introduction of resistance to plant diseases or of increased tolerance of herbicides.” (Food, Genetically Modified)

General Overview

History of GM foods

GM foods have had a long history of growing success as well as mistrust amongst consumers. In 1994, the first commercially GM food was introduced when tomatoes were modified to extend the ripening process. (History of GM Foods) Although GM foods were more expensive than the conventional foods, consumers were willing to buy the product. As the industry developed, they were introduced in Europe. Contrary to the expectations, GM foods were not as great of a success as they were in the United States of America. After extensive scientific research in Europe, it was found that the ingestion of genetically modified food potentially led to physical changes. The discovery caused concern within the European community. As a result, protests began against companies that practiced the production of GM foods. However, GM foods were accepted in other parts of the world such as India. The production managed to gain popularity in many parts of the world, and soon the genetic modification process continued on other products such as corn. (Murnaghan, Ian)

Current production of GM foods



In the recent years, GM technology has been adopted by farmers on a global scale. Hence, these crops are being grown more in developing countries where 54% of worldwide GM crops were grown in developing countries in 2013. The implementation of this process is partly due to the increased demand for cash crops of e.g. soybeans and corn. (Genetically Modified Food)

Global status of commercial GM crops

2011, by millions of hectares

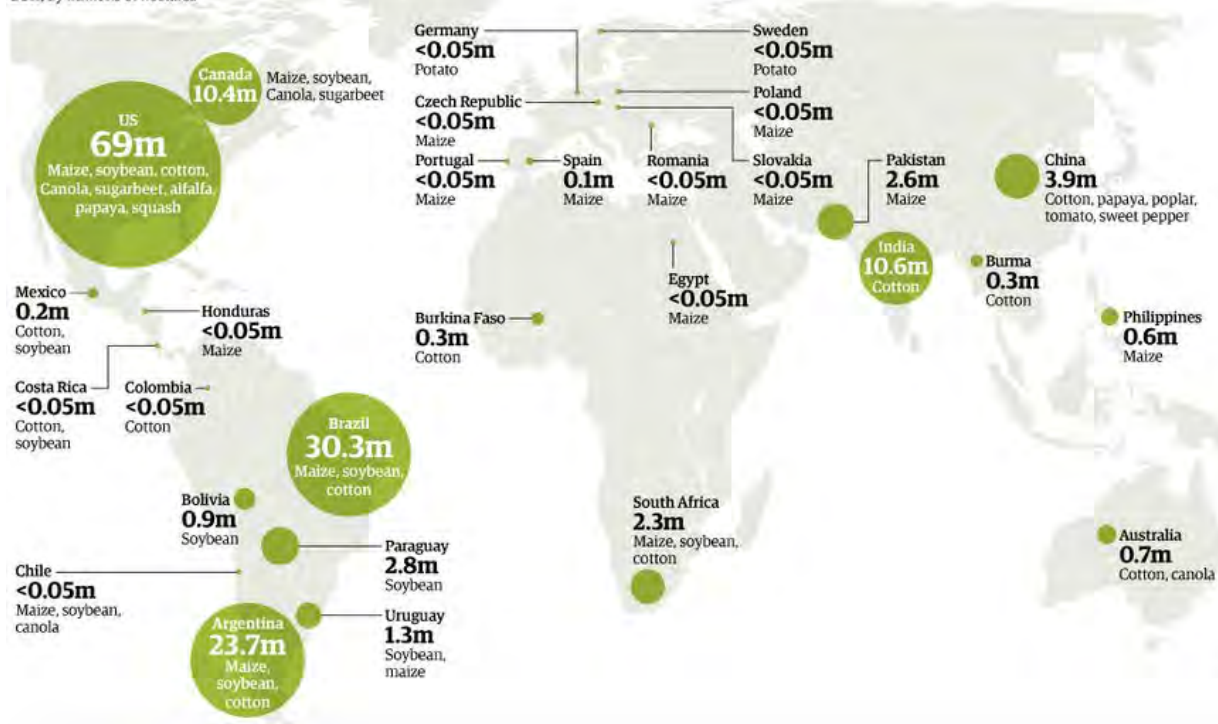


Figure 1 Global Map of Genetically Modified Crops

Global Status of Commercial GM Crops. Digital image. The Guardian. N.p., n.d. Web. 13 June 2015. http://static.guim.co.uk/sys-images/Environment/Pix/columnists/2012/2/9/1328782181883/world_GM_crops.gif.

The map illustrates where GM crops are most prominent, in terms of land use. Note that although GM crops are mainly foods, this map also includes cotton which is not as relevant to the issue at hand.

Controversies

Controversy has been inevitable over the period of development of GM foods. With rapid growth over the past decade, a lot of debate has been going on about the process, benefits and risks of genetically modifying foods. Consequently, the level of success of GM foods differs between member states. While some believe that the solution has been found to addressing problems such as food security, malnutrition, and agricultural efficiency, others are reluctant in believing that GM foods are harmless. Genetic modification reduces the need for conventional chemicals and may increase nutritional value. Additionally, higher yields are obtained with crops that are less reliant on water and can withstand changing soil and

climate conditions. This could serve as a solution to relieve the impacts of population growth on the agriculture industry.

However, fundamental factors that affect the question of whether GM food should be produced include whether they should be labelled, the reliability of publicized scientific research, the environmental and social effects, the economic benefits for businesses and farmers, and the need for governmental regulations.

Major Parties Involved and Their Views

European Union

The European Union has enforced measures to ensure safe production of GM foods. A legal framework has been established whereby risk assessments take place by the European Food Safety Authority (EFSA). Furthermore, the European Union has a focus on clear traceability of GM foods on the market and well as clear labelling on the product to inform consumers. (GMO Legislation)

Greenpeace

Greenpeace is an advocacy group against GM foods because they feel that “risks have not been adequately identified and managed”. Furthermore, they question the objectivity of regulatory authorities. They have proposed measures such as the labelling of GM ingredients as well as separating genetically engineered crops from conventional ones. (Genetic Engineering, *Greenpeace International*)

United States of America

The United States of America widely practices the production of GM foods. In 2014, 94% of the planted area of soybeans and 93% of corn were genetically modified varieties. Genetic modification is notably prominent in the state of Hawaii, where 80% of the Hawaiian papaya is genetically engineered to resist the deadly ring spot virus. (Genetically Modified Food)

Zambia

Zambia, as well as its neighboring south African countries, are known to be reluctant towards accepting GM foods. The country faced severed droughts and starvation in 2002. When the United States of America offered relief food, the Zambian government rejected it.



Knowing that the relief food was genetically modified, the Vice President wanted advice based on scientific research carried out by Zambian experts. On behalf of the nation, the President stated that they would rather starve than accept GM foods without establishing its safety. (Zambia Rejects Genetically Modified Food Aid)

Timeline of Events

Date	Description of event
1994	The first GM food is approved by the US Food and Drug Administration, and is available in supermarkets.
1997	Mandatory labels on all GMO food products is enforced by the European Union which is an important event because the European Union stands out as other countries have not implemented such measures.
1999	GM foods begin to dominate the global agriculture industry as over 100 million acres worldwide are planted with genetically engineered seeds. (Shireen).
1999	Papayas that are resistant to the ring spot virus are grown using biotechnology. They are consumed in both Canada and the United States of America. However, the European Union does not approve of GM papayas. Currently it seems unlikely that the EU will import or sell GM papayas as up to now, no applications for approval have been submitted. However, several Asian countries are producing GM papayas as Hawaii has done. In Hawaii, three quarters of the total papaya crops are genetically modified.
2002	Zambia, amongst other nations in the region of Southern Africa, rejects relief food offered by United States of America due to the fact that it is GM food.



- 2009 China releases safety certificates for two varieties of GM rice and a variety of GM maize. Although believed that this would alleviate social tensions on opinions of whether or not to produce GM foods in relation to their safety, protests continue on using GM foods.
- 2013 The Food and Agriculture Organization (FAO) warns the Ugandan Government that currently using GMO Foods as a solution to eradicate hunger is not advised. They state that they are not against the production of GM foods. However, more scientific data must be obtained proving that it is safe for consumption. Furthermore, the UN organization has concerns that greater production of GM foods will have negative effects on the Ugandan agriculture industry as it might impact the soil.

UN involvement, Relevant Resolutions, Treaties and Events

The Cartagena Protocol on Biosafety is an international agreement founded on the basis of regulating genetically engineered organisms, including GM foods. As a result of mobilization amongst global communities and organizations such as Greenpeace, this subsidiary agreement to the UN Convention on Biological Diversity was made. The objective is to “regulate the international trade, handling and use of any genetically engineered organism that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health”. The Cartagena Protocol enforces effective measures that deal with the production, importation and exportation of GM foods through its precautionary approach. It allows developing nations to create a balance between ensuring public health and economic benefits of GM food production. Furthermore, it requires that member states are informed about the imports of GM foods so that they can decide whether imports should be banned in case of lack of scientific evidence that the products are safe. Finally, labelling of shipments containing GM foods is required. While 167 member states of the United Nations have approved the protocol, countries that predominantly produce GM foods have not ratified it yet which is a great limitation. Nevertheless, the formation of such a protocol is of paramount importance to the question of production of GM foods as it allows member states to deal with the issue in an effective manner, if GM foods are to be accepted.

- Cartagena Protocol on Biosafety
- The Kuala Lumpur-Nagoya Supplementary Protocol



Evaluation of Previous Attempts to Resolve the Issue

Many of previous attempts have been founded on the basis of continuing the production GM foods, but doing so in a manner that enforces regulations in order to ensure safe distribution of foods produced through genetic modification. Hereby, the main objective is reduce the risks of GM foods as much as possible through setting a limit of genetic modification content level. In Europe, all GM foods with GM contents above 0.9% must be labelled. However, issues arise in the reliability of such regulations as 31% of products labelled as GMO-free in South Africa actually had a GM content level above 1.0%. (Genetically Modified Foods Regulations) Furthermore, a limitation is that not all countries are required to label such foods. Nonetheless, the fundamental principle of labelling can prove to be effective as consumers are informed about the product they are about to buy. Before the product is labelled, it must be assessed by several organizations, depending on the country, that approve the release of GM foods. The solution shows that if the production of GM foods continues, certain measures have to be taken into place.

On a similar note, many countries have imposed stricter regulations on the distributing of GM foods which is extremely advantageous. Besides agencies that check up on GM foods before they are labelled, similar organizations review GM foods before they are simply distributed within a member state. In India there are several processes that have to be undergone prior to releasing GM foods for consumers. The Indian Environment Protection Act oversees all releases of GM foods in India while the Ministry of Agriculture must give permission for any GM food before it is released. Such a system is beneficial to the question at hand as it eases the social opposition to GM foods due to the fact that in many cases people may be less reluctant to buying GM foods knowing that its release has been authorized by specialized organizations.

Aside from labelling and assessing GMO foods, European research programs have been set up in order to investigate the traceability of GM foods and possible methods of doing so. However, a limitation is definitely the costly economic impact which is the reason that traceability processes are not implemented in North America. This solution is also effective to the issue at hand because it further allows the production of GM foods to continue in a safer manner.

Finally, the coexistence of GM crops (essentially the GM foods) and conventional crops has been regulated through isolation distances or biological containment methods.



This is to reduce the risk of GM crops affecting non-GM crops if they are to be mixed. The two distinct types of crops are kept apart from each other with distance regulations that vary per country. (Genetically Modified Organism Containment and Escape)

All of the previous attempts have given insight on ways to improve regulations on the production of GM foods with an aim that such foods can be produced and sold to consumers more safely through reducing the potential risk of the GM food harming the buyers.

Possible Solutions

The question at hand is whether GM foods should be produced or not. If they should, solutions must be found to how member states should deal with GM foods if they choose to accept the production of GM foods, in a way that prioritizes social factors such as health. The solution to the question can be found through tackling the main concerns about GM foods, primarily the uncertain health risks. Extensive research on the matter is of paramount importance in order to fully understand the health risks of GM foods. Furthermore, labelling of GM products may seem ineffective in cases of illiterate consumers or consumers who simply have not been educated on genetic modification. Hence, there is a need for enforcing this introduction of this topic into global education systems so that individuals have the opportunity to decide for themselves whether they can trust the production of GM foods. Educating the global population on GM food production and its risks can also be achieved through public awareness. Current regulations that are put into place have several limitations that need to be dealt with. Further strengthening regulations (e.g. assessing of GM foods before release and labelling products, implementing universal isolation distances between GM and non-GM crops) could be beneficial. Additionally, stronger regulations may be imposed regarding the labelling of GM foods, such as imposing mandatory labelling on all GM foods as currently it is voluntary in certain member states. Many countries support the production of GM foods and those countries must advocate the benefits of using GM foods, for example the fact that it has the potential to feed 9 billion people and is potentially a step in reducing the issues we face as populations rise. In order to achieve this, the mentioned steps could possibly be implemented in order to beneficially use GM food production.

However, another manner of tackling the question of the production of GM foods is through promoting alternative methods to mainly farmers in countries that produce GM foods. An example of an alternative method is ecological farming or crop rotation. Encouraging alternative methods to genetic engineering in countries where there is a high prominence of



GM food production would reduce reliance on such products, and instead use safer methods in terms of potential effects on consumers' health. Alternative methods are also key to reducing the harm on the environment that producing GM foods creates. Hence, farmers must be educated about the impact of the production of GM foods on soil and the environment.

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Appendix or Appendices

Appendix 1: Useful Links

<http://www.greenpeace.org/international/en/campaigns/agriculture/solution-ecological-farming/>

http://www.who.int/foodsafety/areas_work/food-technology/faq-genetically-modified-food/en/

<http://learn.genetics.utah.edu/content/science/gmfoods/>

