

Forum: Environmental Commission

Issue: The issue of limiting environmental impacts caused by the production of GMOs

Student Officer: Marianina Papadi

Position: Deputy President

PERSONAL INTRODUCTION

Dear delegates,

My name is Marianina Papadi and it is my honor to serve as the Deputy President of the Environmental Commission in this year's PS-MUN Conference. I am sixteen years old and an 11th grader in the German School of Athens. In the course of the last three years I had the chance to participate in 9 conferences. This conference will be my 10th overall and my second one as a Student Officer. I hope that this study guide will be helpful to your research and preparation for the conference; however, I recommend that you do make an extra research and not base your preparation only on the study guide in order to come more confident and well-prepared in the conference. In any case if you have any questions concerning the topic do not hesitate to contact me on my e-mail: m_papadi@otenet.gr. I am looking forward to meeting you all and I wish that we have productive and fruitful debates.

Best regards,

Marianina Papadi

INTRODUCING TOPIC

The last few years there has been a great scientific progress on molecular biology which has the possibility of increasing our understanding of nature. However, the biodiversity and the quality of the world's food supply are being put at risk as scientists continue with genetic experiments on the environment. Through genetic engineering scientists can provide plants, animals and micro-organisms with desirable characteristics by altering their DNA. All these new creations



are called GMOs (Genetically Modified Organisms) and they can spread through the nature contaminating non- genetically engineered environments. Their release is very dangerous as GMOs cannot be recalled once they are in the atmosphere. Because of many interests people are not allowed to know what kind of genetically modified ingredients are included in the food chain and as a result they cannot avoid them. As the integrity of the environment is threatened we need to protect and respect biological diversity as a global heritage and fundament to our survival.

DEFINITION OF KEY-TERMS

Genetic Modification

Genetic modification we call the process in which an organism is modified through the addition of new genetic material or DNA. It is also called genetic manipulation or genetic engineering.

Genetically modified organism (GMO)

Organism or microorganism whose genetic material has been altered by means of genetic engineering. They can be ingredients like corn, canola and soybeans.

Biotechnology

Biotechnology is used to create new products by means such as the manipulation of already existing organisms.

Organic

Organic are plants and animal products that are produced without pesticide or antibiotics. They do not contain genetically manipulated ingredients.

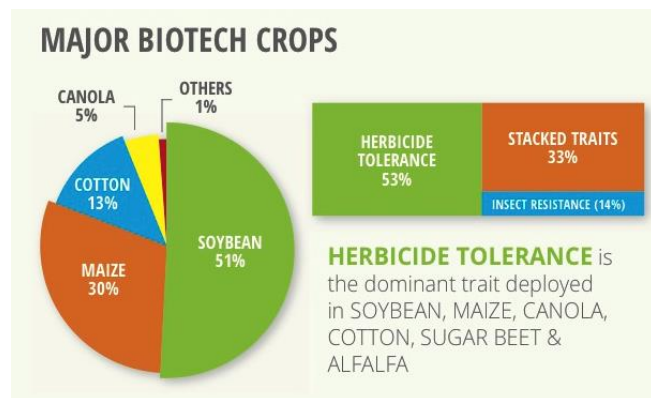
BACKGROUND INFORMATION

There are 28 countries all around the world growing crops that are genetically modified while many others prohibit their cultivation; however, they allow GMO products to be on the market.

Genetically modified objects were introduced at first as there was not enough food to feed world's population. Therefore, new methods were found to deal with malnutrition and hunger all over the world and especially in developing countries.

In 20 developing and in 8 industrialized countries GMO crops are grown on almost 450 million roods. Since 1996 when the first GM crops were approved, 4.94 billion roods have been planted.

GMO's are mostly used in food. Genetically modified crops contain mainly canola oil, alfalfa and sugar beets. Except for that, GMO's seem to be used nowadays in scientific research and pharmaceuticals. Genetically modified organisms contain also microorganisms such are bacteria, insects, mammals, fish and plants.



Soybeans represent more than 50% of the genetically modified crops while corn represents 30%, cotton 13% and canola 5%. Also, 53% of the crops are engineered so that they can be tolerant to herbicides, 14% for insect resistance and 33% for stacked traits.

Negative effects of GMO's on the environment

1. Genes may “escape” and be placed on different members of the same species or even on other species. The genes included in the GMO's are not the exception because interactions are possible to occur either at a gene or plant or ecosystem level.
2. Genes can be modified in a harmful way. However, it is still unknown whether the creation of artificial genes and their release in an organism could be negative or effective over generations once they are inserted.
3. Genetically modified crops may be threatening to the biodiversity of crops when they are grown in places where the origins of that crop are. Except for the fact that they compete wild species they also compete the work of traditional farmers.
4. GMOs have an impact on birds and insects as well. Scientists have not figured out yet what exactly the consequences may concern but their interaction with non-target species can be another important issue.

Negative effects on human health

1. Through the release of GMO's in the atmosphere there is a possibility of allergenic genes to be transferred to other species causing allergies to the human organism.
2. The use of GMOs in food products is a risk to human's health. GM food products, whose release has not been approved, have appeared on the market.
3. They can cause resistance to antibiotics because genes that cause antibiotic resistance may be transferred to GMOs.

Benefits for the environment

1. Through genetic modification more food is produced with less land being used.
2. It's possible that GMO's reduce the environmental impact of industrial processes and chemicals. These achievement will not only be beneficial for the environment but for the health of the industrial workers as well.
3. If vegetables and fruits are genetically modified they will not be spoiled on the way to the market and the trade of countries will be developed.

Benefits for human health and for other organisms

1. Vaccines and medicines for farm animals may be introduced. With the help of molecular biology it has a great possibility to be achieved.
2. Molecular biology will also be a key factor for the identification of allergenic genes. Despite the fear of allergies caused to humans, scientific research might find a way to characterize these kind of genes and remove them.

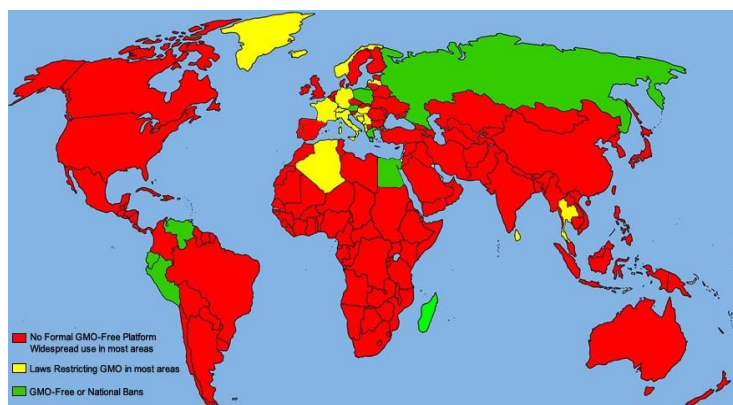
Relevant treaties

Convention on Biological Diversity

The convention came into force on 29 December 1993. Its adaptation aims to conserve the biological safety of the ecosystem, to achieve a sustainable use of other parts of biological diversity and to share fairly the benefits of the manipulation of genetic sources.

Cartagena Protocol on Biosafety

The Cartagena Protocol on Biosafety is an international agreement with the goal of sage handling and transport of LMOs (living modified organisms) that are products of biotechnology and may have negative effects on the environment. The protocol was adopted on 29 January 2000 and it came into force on 11 September 2003.



Source: prevent disease.com

TIMELINE OF EVENTS

Date	Description of event
1935	DNA has been isolated by the Russian scientist Andrei Nikolaevitch Belozersky
1975	Asilomar Conference: biologists doctors and lawyers find guidelines for the safe use of genetically engineered DNA
1980	The first GMO patent was allowed
1982	FDA (Food and Drug Administration) approves humulin to appear on the market as the first GMO
1994	The Food and Drug Administration of the use allows the FLavr Savr tomato to be on the market
1997	The European Union requests the mandatory labeling of all GMO products
1999	The market begins accepting GMO food crops at an alarming rate
2003	Bt toxin was found on GMO cotton crops in the US, a genetically engineered toxin that is produced by organisms that are modified
2011	Bt Toxin is found in the blood of a pregnant women and research shows that the toxin is passed to fetuses

MAJOR COUNTRIES INVOLVED

United States of America

The United States of America is the country with the highest production of GMO products. However, GMOs play a major role in the economy of the industry of biotechnology and as a result they have become important for the US economy as well. The US has implemented different regulation systems concerning the production and consumption of GMO crops but it doesn't have any specific legislation to the GMO's. The country is not a party of the Cartagena Protocol on Biosafety and it isn't a party of the Convention on Biological Diversity either. In 2012

US represented 69.5 million hectares of GE crops of the 170.3 million hectares on the whole globe. 90% of cotton, corn and soybeans grow in the US.

Argentina

Argentina was one of the first countries to use GM crops in agriculture. As Argentina continuously increases its production to GM products it has become the third largest country in the biotechnology industry after the US and Brazil. The country conducts research concerning the release of genetically modified organisms in the environment and the use of GMO's in food products.

Brazil

Law No.11, 105 of March 24, 2005 has put an end to the controversy concerning GMPs in the country. This law establishes monitoring systems for activities related to GMOs and their products. Scientific advances in biotechnology. Life protection, human and animal health are the guidelines of the county's policy on the issue.

New Zealand

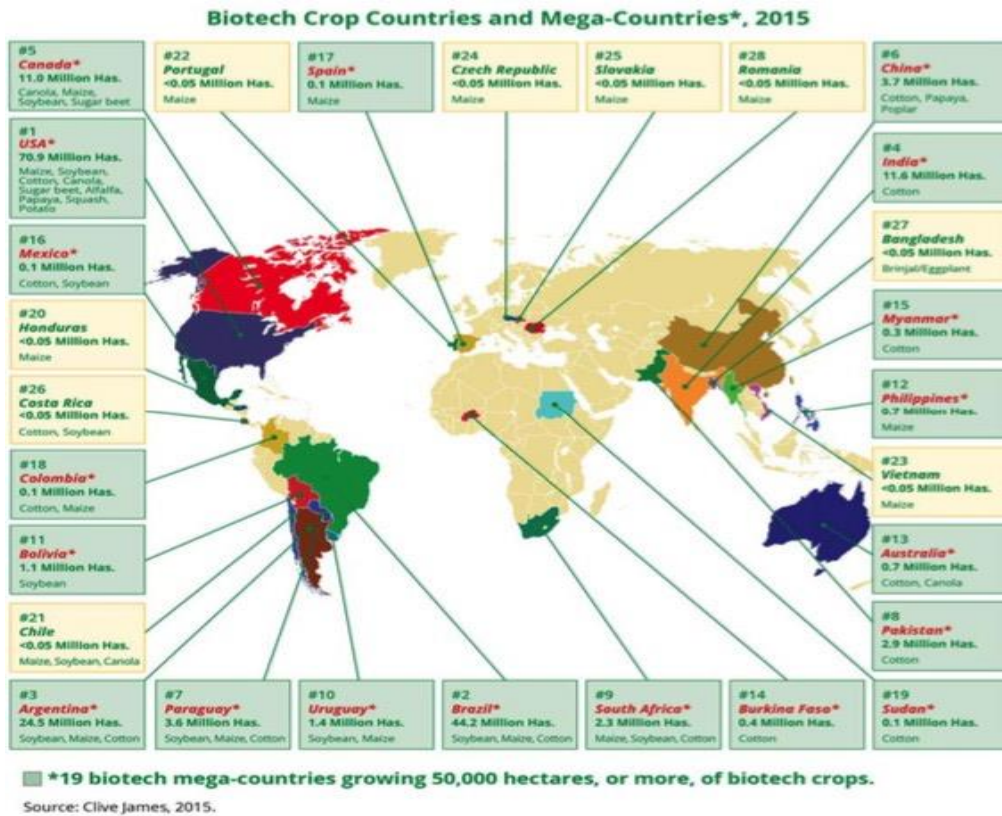
New Zealand maintains the most comprehensive and approval policy for GMOs in the whole world. Genetic Engineering is only allowed in pharmaceutical research in pest control the enhancement of the productive capacity of animals and crops. Despite this, the results of the research are not allowed to be released yet. GM crops are not growing in the country right now and GM food products can be released in the market after fulfilling labeling requirements.

European Union

According to the legal framework of the European Commission, the environment as well as the health of humans and animals must be protected before any GMO product is placed on the market. Generally the European Union has a strict legislation concerning any process that has to do with GMOs. EU members have the right to restrict the cultivation or even the sale of already approved GMOs if they have harmful effects on health and environment.

Nigeria

Nigeria has adopted GM food products, a fact that has provoked a lot of controversy. Nevertheless this situation is justified as the GM food products are given from the USA to eliminate hunger and poverty in these countries. According to the Centre for food safety, the country accepts the importation of GMO foods under the condition that this food will be milled.



[source: www.isaaa.org](http://www.isaaa.org)

POSSIBLE SOLUTIONS

Despite the previous attempts to solve the issue it seems that the problem has not been tackled effectively yet. What is necessary is the introduction of a legislation relating to the labeling of GE products in every country in order for the citizens to know what kind of ingredients are contained in the food products they consume. Furthermore, the population must be educated about the harmful effects of GMOs through the use of media and the news and get communities involved by starting farms or donating land to planting crops. Information of the public and especially of children could be achieved through campaigns and school projects. This way the citizens can identify the problem and have security to where their food comes from. As mentioned before, the GMOs have some positive effects, such as the production of more food with less use of land, the use of pesticides is reduced, and the quality and taste of food is better. Therefore, in order to take advantage of these “positives” further scientific research should be promoted. Research will ensure what the possible harmful health effects are so that they can be controlled and released in the atmosphere without threatening our ecosystem. Governments should also be involved in the issue. The public should be activated through petitions, letters and phone calls, so that the government may deal with the issue more closely.

BIBLIOGRAPHY

"GMO Timeline: A History of Genetically Modified Foods." *GMO Inside*. N.p., 18 Sept. 2013. Web. 13 Jan. 2017

"GMOs: Pros and Cons." *Healthline*. N.p., n.d. Web. 13 Jan. 2017.

"3. WHY ARE GMOS PRODUCED?" *3. WHY ARE GMOS PRODUCED?* N.p., n.d. Web. 13 Jan. 2017.

"GMO Education." *Institute for Responsible Technology*. N.p., n.d. Web. 13 Jan. 2017.

"Advantages and Disadvantages of GMOs." *OccupyTheory*. N.p., 08 May 2015. Web. 13 Jan. 2017.

Helmer, Jodi. "8 Terms You Need to Know to Talk GMOs." *Hobby Farms*. N.p., 01 Feb. 2016. Web. 13 Jan. 2017.

N.p., n.d. Web.

"Guillermo José Latorre Merino." *Guillermo Jos Latorre Merino RSS*. N.p., n.d. Web. 13 Jan. 2017.

"Restrictions on Genetically Modified Organisms: New Zealand." *Restrictions on Genetically Modified Organisms: New Zealand | Law Library of Congress*. N.p., n.d. Web. 13 Jan. 2017.

"Restrictions on Genetically Modified Organisms: Argentina." *Restrictions on Genetically Modified Organisms: Argentina | Law Library of Congress*. N.p., n.d. Web. 13 Jan. 2017.