

# Research Report

# MUNISH '12



Please think about the environment and do not print this research report unless absolutely necessary.



**Forum:** Environment Commission

**Issue:** The question of genetically modified foods

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**Position:** Deputy President of the EC, MUNISH 2012

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## Introduction

The world's population is growing at an alarming speed, and experts are worrying whether the amount of food provided by natural resources is sufficient to feed the entire world population and, at the same time, solve the current hunger crises. However, some researchers think that it's just an issue of food distribution and not of the availability of natural resources or production capacity. On the other hand, many experts are convinced that additional options to food production and agricultural methods are required in order to structurally solve the growing problem of world hunger.

Just quite recently, scientists thought to have found a sustainable solution for the limited agricultural capacity, by modifying the genetic structure of organisms, in this case to be used as food, For example, the genetic code of a plant was found capable to be altered in order to promote faster growth, higher yield and safer use. These so-called genetically modified foods are often expected to be able to play a vital role in the growth of the food production capacity. However, before this can become reality, it is necessary to investigate not only the advantages, but also the possible disadvantages and even the risks involved with genetic modification.

## Definition of Key Terms

### Genetically Modified Foods (GM foods)

The term "genetically modified foods" refers to food with genetic makeup that has been altered by using DNA biotechnological procedures. This can be done by integrating different genes of other organisms or rearranging genes that are already present in the organism. This method is often used to delay the ripening of crops, increase the speed of crop growth, make crops resistant to certain kinds of diseases or insects, and even make them produce drugs. Other than crops, animals are also a target of genetic modification, often in order to let them grow faster or improve the animal's health. Another common use of genetic modification is to add more nutrient value to food.

## Food Shortage

Food shortage is a term used when there is not enough food available to feed a population. Food shortage is currently a big problem in Africa, mostly as a result of the drought that is occurring in that area and the big population growth.

### General Overview

#### Background

In 1946, scientists discovered the possibility of DNA transfer for the first time. This discovery became a huge step forward in science, and, later on, would be used to alter the genetic structure of crops. The first time this technique was used, in the nineties, was to delay the ripening of tomatoes. These genetically modified tomatoes were allowed to be grown commercially in the United States and to be sold without any label to distinguish them from normal tomatoes. These modified tomatoes were much more expensive compared to conventional tomatoes, but they were supported by the customers. A variation of this tomato was later introduced in Europe, but, unlike in the US, it was properly labeled and priced. This invention of genetically modified food was thought to be the solution to the issue of food shortages all around the world, but there were a lot more disadvantages than originally anticipated, which made it more difficult to cope with and use this new invention properly.

#### Purposes

Genetic modification of food is used for different kinds of purposes. As said before, it was originally used to delay the ripening of crops in order to enable the possibility of consuming them after a longer period of time. Other, very often used, purposes are the addition of nutrient values, like vitamins, and drugs. The addition of these is very useful if a person, or even a country, isn't able to get these nutrient values and drugs easily in a natural way. This way, it's still possible to obtain them and make the body healthier.

In the United Kingdom, there's a way of genetic modification that is close to being approved by the authorities for commercial use. This genetic modification makes the crops resistant to insects which otherwise would kill the crop. A similar way to how genetic modification is being used in the United States, but instead of making them resistant to insects, the crops are being engineered in a certain way so that they are able to produce a toxic substance that kills different kinds of insects that would normally eat the crop. A lot of crops in the United States have also been modified to become resistant to multiple plant diseases.

Besides on crops, genetic modification is also used on different kinds of animals that are to be consumed, or being tested, like cows, fish and mice. The most common two purposes of this method are

to improve the quality of the food and to speed up the process of obtaining it, for example, by quickening the growth, and to making animals resistant to different kind of diseases. Other purposes are to research human diseases or to produce consumer products.

## Controversy

On first sight, the use of genetic modification in the food chain brings quite some advantages. However, after thorough investigation, possible disadvantages showed up; the biggest disadvantage being harm to the human body. According to some scientists, consuming genetically modified food can lead to the development of certain diseases that are immune to antibiotics and an increase in the chances of developing cancer. However, on the other hand, other studies for over more than 15 years have stated that the consumption of food that has been genetically modified isn't more risky than natural food. Another important thing to notice is that this invention is quite new, which implies the possibility of unknown effects on the long-term.

Other than medical disadvantages, environmental, cultural and religious disadvantages are also part of the list. Genetic modification is seen as an unnatural way to produce food and it is thought to be the cause of damage to other organisms in the near surroundings.

## Regulation

The regulation of the use of GM foods is another very important aspect. The United States stated that it wasn't necessary to take new measures for the regulation of GM foods. There are currently a few agencies that regulate GM foods in the US. These agencies are to ensure the safety of certain products and drugs for both humans and animals, making sure the environment won't suffer because of the use of pesticides and trying to control pest plants and toxic weeds. Labeling is not obligatory. Canada, however, has a strict regulation policy that requires companies that produce GM foods to submit certain data before approval of their food. The European Union's regulation surpasses both the US and Canada by far. GM foods have to be traceable in origin and need to be labeled if the content is greater than 0,9% to be allowed onto EU markets.

## Major Parties Involved and Their Views

### Food and Agriculture Organization (FAO)

The FAO is an organization of the United Nations that tries to find solutions for the current hunger problems. It recognizes the potential of genetic modification, but it also worries about the risks that genetic modification bring with it, especially regarding human and animal health, as well as the environment.

### United States of America

The United States of America is the biggest producer of GM foods, with currently more than half of the total harvest of GM crops. The United States has quite strict regulations, but labeling is not obligatory.

### Argentina and Brazil

Argentina and Brazil are the runners-up of the total GM crop harvest. Although they don't produce as much as the US, it's still an important issue to them.

### European Union

The European Union is very strict about the cultivation of GM crops. Currently, only two crops have been approved for cultivation by the European Commission, and labeling is obligatory if the product contains more than 0,9% of genetic modification.

The United States strongly disagrees with the European Union's regulation agreement, because it arguably violates free-trade agreements.

### Timeline of Events

Genetic modification is an invention of the last century and the role of genetically modified foods has been playing a role for only a few decades. You can find a table with the most important events below.

Date	Description of event
1946	The discovery of DNA transfer between organisms.
1953	The double helix structure of DNA was invented by scientists Crick and Watson.
1983	The first genetically modified plant was produced.
1994	Tomatoes are genetically modified for human consumption.
1994	Genetic modification made its way to Europe, where France approved a GM crop.
1995	The first genetically modified food for commercial production hits the market.
2000	Scientists discover the use for genetic modification to increase the nutrient value of food.

### Evaluation of Previous Attempts to Resolve the Issue

Attempts to promote the safety of international trade in GM foods have been occurring over the

past few years. Other than that, the United Nations tried to adapt labeling and documentation requirements for international trade, but there will still be the need to elaborate more on that point.

## Possible Solutions

Many countries and NGO's still have different opinions about the use of genetically modified food. There are several steps that should be taken to tackle this issue in the best way whilst still taking care for the safety for the human body and the protection of the environment.

A very important step is to make international agreements about the regulation of genetically modified foods. Are member states allowed to make this regulation themselves or should some rules apply to them all?

Member states should collaborate in transparent research programs to find out more about long-term symptoms of genetically modified food. Also, they should think about whether the use of genetically modified food should be reduced before this research is complete, because after that, it will be clear what kind of impact GM food has on the human body and if it's safe to use.

The environment shouldn't suffer from the use of genetic modification. Is it right to invest more in environment-friendly solutions instead of genetically modifying crops that produce toxic material which can damage their surroundings?

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## Appendix or Appendices

- I. <http://www.geneticallymodifiedfoods.co.uk/>  
A very detailed website with different articles about GM foods.
- II. <http://www.csa.com/discoveryguides/gmfood/overview.php>  
An explanation about what GM foods actually are, an overview with advantages and many more useful details to know when writing a resolution.
- III. <http://www.buzzle.com/articles/genetically-modified-foods-pros-and-cons.html>  
A clear overview of advantages and disadvantages of GM foods.