

# Genetically modified food essay

[Business](#), [Customers](#)



\n[[toc title="Table of Contents"](#)]\n

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1. [Introduction](#) \n \t
2. [Environmental Concerns](#) \n \t
3. [Health Concerns](#) \n \t
4. [Economic Concerns](#) \n \t
5. [Regulation of GM Foods](#) \n \t
6. [References](#) \n

\n[/toc]\n \n

## **Introduction**

There has been a raging debate on the existence of genetically modified foods. Proponents of the genetic modified foods base their argument on the increasing population and the need to have food sufficiency. There are many advantages fronted by these proponents as to why genetically modified foods should be encouraged. Genetically modified foods are pest resistant. Therefore, they can withstand attacks from pests. In this regard, genetically modified foods shield farmers from possible financial losses that would be occasioned by pest attacks. Consumers, on the other hand, do not wish to eat food treated by pesticides due to the associated health risks. Crops are also tolerant to drought and, hence, adapt to changing climatic conditions. The weather patterns all over the world have become unpredictable with most parts experiencing dry spells due to global warming. These crops serve as a shield towards the harsh climatic conditions. Despite all these advantages, opponents of genetic modified foods have raised serious

criticism on the use of genetically modified foods. It is obvious that despite the advantages of GM foods, GM foods pose various risks to humanity. To exploit the benefits of GM foods, there is a need of a proper regulatory framework to limit the risks associated with GM foods by a new agency since Food and Drug Administration (FDA) has been ineffective.

Environmental activists, public interest groups, religious organizations, professional associations, government officials, among other stakeholders have raised their concerns regarding genetically modified foods. They have directed criticism on the agribusiness sector for its preoccupation on maximizing return without taking into account the potential hazards of the food. These opponents have also criticized the government for failing to put proper regulatory framework that would regulate the production of genetically modified foods. Every person has an opinion regarding the use of genetically modified foods causing the raging debate on these foods. Most concerns regarding the GM foods fall in the categories of environmental hazards, economic concerns, and human health risks.

## **Environmental Concerns**

Empirical research indicates the existence of possible harm to the environment. There exists the risk of harm that is unintended to other organisms. A laboratory study published in nature last year revealed that B. t corn pollen increased the mortality rates of butterfly caterpillars in monarch. Monarch caterpillars rely on milkweed for consumption but not corn. However, it is feared that B. t corn pollen falling on these plants as a result of being blown by wind may cause death to the caterpillars. Although this study was not done under natural conditions, the findings supported this

perception. Environmental Protection Agency feel that the results of these findings may be flawed and hence more study need to be undertaken. The proposition that the pollens from B. t corn that is genetically modified can cause harm to unintended organisms is causing a raging debate. This leaves a room for further evaluation of this study.

Opponents also argue that there exists the risk of reduction in the effectiveness of pesticides. The DDT pesticide that is now banned was used to get rid of mosquitoes. However, mosquitoes formed resistance to this pesticide and is no longer effective in eliminating them. Opponents of GM foods argue that just like mosquitoes, pest will with time form resistance to genetically modified foods. This proposition negates the fact that genetically modified crops are resistant to pest as per the proponents of the GM foods. Therefore, growing of GM foods should not be supported by the fact that these crops are resistant to pests since in the long run there will be a necessity of using the pesticides.

There is also the risk of transferring genes to non-target species. The concern is that crops that have been engineered for herbicide tolerance may cross breed with weeds. In this event there will be transfer of herbicide tolerance genes to the weeds from the crops. The resulting weeds will be super weeds as they become tolerance to herbicides. It becomes highly difficult for farmers to eliminate these weeds using herbicides. Other genes that have been introduced may cross over into other crops that have been planted adjacent to the modified crops. The likelihood of interbreeding is indicated in the farmers' defense against Monsanto lawsuits. The company claimed that the farmers planted Monsanto GM seeds that had been licensed

by the company without due permission. The company's claim was that farmers obtained their seeds from a source unknown to them failing to pay royalties to the company. This was from the fact that the farmers may have harvested GM foods from their field. The farmers, in their defense, argued that their crops may have been cross-pollinated from GM crops in their neighbouring fields.

There exist various solutions to the fore mentioned problems. The exchange of genes by plants is through their pollen. There are two ways of ensuring that the non-targeted species do not receive the genes from the GM crops. The first solution is for professionals in this field to produce plants that are male sterile. This ensures that there is no production of pollens by GM crops and hence no chances of cross pollination. GM plants may also be modified to ensure that their pollen do not contain the GM gene. Cross-pollination in this case may not occur and if insects that are harmless eat the pollen from GM plants, chances are that they would still survive.

Another viable solution is creating buffer zones in areas around the planting zones for GM crops. For instance, corns that do not contain GM crops may be planted around the corns that are not genetically modified. This non-GM corn will not be harvested and it provides a refuge to the harmless or beneficial insects. These insects will eat the non-GM crops and will not form any resistance to pesticides. The chances of developing resistance towards B. t pesticides are minimized since they will consume from crops that are not contaminated. The transfer of genes to other crops and weeds is minimized since the wind-blown pollen may not travel any distance beyond the buffer zone. However, the feasibility of this form of planting depends on the size of

acreage required to put up the buffer zone. Given the increasing population and the reduction in the size of acreage ownership, highly few farmers, if any, will establish the buffer zones. This solution, therefore, remains viable for individuals and corporations that own large tracks of land.

## **Health Concerns**

The other concerns by opponents of genetically modified foods relate to the risk they pose to human health. GMO experts have been accused of focusing on their personal monetary gains at the expense of the health of the consumer. GM food increases risk of allergies in its consumers. Many children within Europe and United States have developed allergies that are life threatening towards peanuts as well as other foods. There exists a probability that the introduction of a new gene into plants creates new allergens. This may also lead to allergic reactions among susceptible individuals. There was a proposal of incorporating genes from nuts in Brazil into soybeans. This proposal was abandoned on the basis that there was fear of eliciting allergic reactions that were not expected. Extensive testing of the genetic modified foods is essential so as to eliminate the possibility of risk the food may cause to the consumers. This may be a viable way of ensuring there is no development of allergies to food. Labeling of GM products may also be essential as it leaves the consumer on discretion in regard to consumption.

There is also the risk of unknown effects that may be caused on human health. There is increasing concern that the introduction of foreign genes into food crops may lead to negative and unexpected impacts on the health of human beings. An empirical study that was published in Lancet, which

looked into the impacts of GM potatoes in the digestive tract of rats, confirms this assertion. The study revealed that there existed differences within the intestines of the rats that were fed with GM potatoes and those that fed on normal potatoes. Just like the case in monarch butterfly data, the results of this study have been criticized as flawed and cannot stand scientific scrutiny. Moreover, the introduced gene was from a flower lectin snowdrop that is known to be toxic towards mammals. The use of this gene was simply meant to test the methodology of the study. There was no intention of using these potatoes for animal or human consumption. There is a wide believe by scientists that consumption of genetically modified foods has no health issues among human beings. However, there is an agreement that these foods possess elements that may cause allergies towards consumption of certain foods.

## **Economic Concerns**

The process of bringing GM foods into the market is lengthy and costly. It is noteworthy that agro-biotech companies aim at making profitable returns on their investment. There is also the increasing need on patenting GM plants and genetic engineering technologies and infringement of these patents is a big concern within agribusiness. Patenting of these plants automatically raises the prices of products since it creates a monopoly. Advocates of consumers` protection are worried that these actions are at the detriment of the consumers as the question of affordability becomes an issue. Raising the price of these seeds means that small farmers and even the third world countries may not afford the seeds for the GM crops. This results in widening the already existing gap between the rich and the poor. However, there is

hope that in the gesture of humanitarianism non-profit organizations and companies will come on board and offer the seeds to the impoverished nations at reduced costs.

There exist difficulties in the enforcement of patents. This is evident in the contention between the farmers and the GM Company in Monsanto. Farmers claiming that they grew GM crops involuntarily through cross-pollination. A way of combating the infringement of a patent is through the introduction of suicide genes into these GM plants. The suicide gene ensures that the plants are only viable within one growing season and the seeds produced by these plants are sterile. This means the seeds will only be used for consumption and farmers will have to purchase new seeds for planting in the next season. The introduction of suicide genes will, however, be disastrous to poor farmers and especially in third world countries due to financial constraints. Most of these farmers have to set aside a portion of their harvest for replanting as they cannot afford to purchase planting seeds each year. However, despite all these negative impacts of the genetically modified foods there are many advantages associated with the crops. The increasing population brings about increasing demand for food. This has forced the experts to result to genetic crops to respond to the urgent needs. The changing climatic conditions as discussed earlier accelerate the need of having seeds that can withstand harsh weather conditions. In this regard, experts in the sector of agro-biotech have resulted in the production of GM seeds. It is, therefore, necessary not to fully ban the production of GM seeds. Experts should engage in modification of the seeds as well as the



establishment of necessary regulation by governments on the production of these seeds.

## **Regulation of GM Foods**

Apart from modification of GM seeds, governments need to engage in regulations to ensure their citizens consume healthy foods. Governments should task experts with producing food that is fit for consumption or else be barred from selling these foods. Moreover, governments all over the world are working to establish a regulatory framework that monitors the effects of new GM varieties alongside approving these varieties. Due to the difference in social, economic, and political climate in countries and regions, the response by governments is different. In Japan, for instance, health and welfare ministry established a framework that ensures testing of GM products is compulsory as of 2001. Before that, testing GM products was voluntary. Supermarkets within Japan offer both unmodified foods and GM foods. Customers are showing a strong preference on unmodified vegetables and fruits. The United States has three government agencies responsible for the regulation of GM products. This ensures that proper scrutiny on these products is ensured and the produced products are fit for the country. The products have to satisfy the environmental concern by ensuring production of environment friendly plants. The agencies also ensure that foods produced are fit for human consumption. This ensures that the health concern is well taken care of. Regulation is a vital part in regard to the production of GM foods. Governments should engage in this process so as to protect their subjects.

Modification of the GM products is also an essential part in ensuring minimal

negative impacts of the food. Experts need to assess the impact of these foods and come up with products that address the environmental and health concerns of the population. Removing the total ban on GM foods ensures there is food security.

People should, however, be taught on the effects of the GM products. In this regard, there should be proper labeling of the GM foods. This will ensure that consumers are aware of what they are consumed and they do so at their own choice. There exists contention on the labeling of GM foods. The agribusiness industry believes that the labeling of these products need to be on a voluntary basis. The only influence on labeling should be the market that is a free sector. If a customer prefers labeled foods, then the industry has the risk of alienating the customer or else regulates itself. On the other hand, consumer interest groups are demanding the existence of a mandatory framework on the labeling. They feel labeling should be mandatory and consumers should know what is that they are consuming. Despite the negative impacts of GM products, total ban should not be encouraged. Instead regulation and modification of the GM products should be encouraged. The interests of both producers and consumers should be addressed. To ensure this, there should be a separate government agency to take over the role of monitoring the genetically modified crops. This government agency should have no ties with the companies that benefit from the sale of these products.

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