



FOOD AND AGRICULTURE ORGANIZATION (FAO)

Description of the Committee

The Food and Agriculture Organization (FAO) was established as a UN Agency in 1945, and it addresses issues of nutrition, agriculture, and rural populations on a global scale. The FAO is composed of 194 members, two associate members, and the **European Union (EU)**.¹



The FAO has four stated strategic goals:

- 1) to raise levels of nutrition,
- 2) to improve agricultural productivity,
- 3) to better the lives of rural populations, and,
- 4) to contribute to the growth of the world economy.²

The FAO is similar to two other UN agencies: the World Food Programme (WFP) and the International Fund for Agricultural Development (IFAD). The three agencies, all based in Rome, often collaborate on key projects and research. While the three agencies share common goals, they each have a different **scope**. The World Food Programme focuses on hunger and **nutrition**.³ The IFAD uses financial strategies, such as loans or grants, to fight rural poverty.⁴ The FAO focuses on making international **policy** that addresses food and agriculture issues.

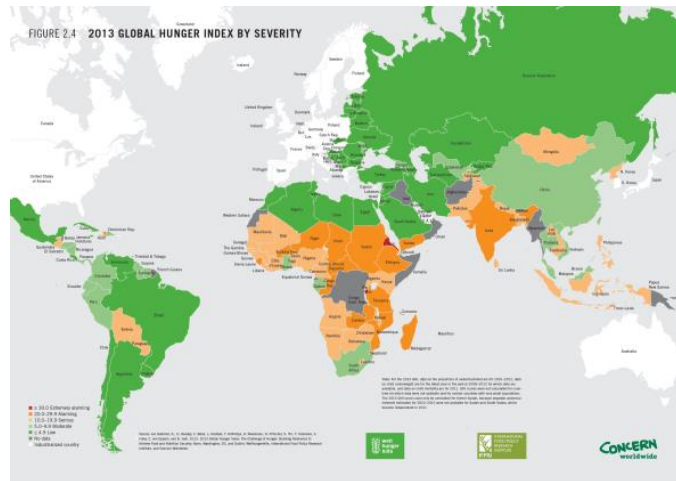
TOPIC: SUSTAINABLE DIETS: GMOS

Introduction

It is easy to imagine that world hunger might be solved if only everyone who was hungry had access to food. But food is not that simple. There are 900 million people suffering from hunger in the world, but there are 1.5 billion people who are overweight or obese. There are also as many as 2 million people suffer from **micronutrient malnutrition**, meaning that they are not getting enough important nutrients in their diet.⁵ Heart disease, diabetes, and other diseases are also caused by unbalanced diets.⁶

The FAO and other groups work to support **sustainable diets**. A sustainable diet is designed to last – benefitting not only the people who eat it today, but also the generations of people in the future who will still be able to enjoy the resources it uses. Sustainable diets generally have a low impact on the environment, are healthy and nutritious, and support **food security**: availability and access to food.⁷

In contrast, **unsustainable diets** harm the environment, local economies, and even the people eating them. For example, **overfishing** is a quick way for fishermen to make money – until they find that there are no more fish left!⁸



2013 Global Hunger Index. White and green countries have low levels of hunger, while orange and red countries face more serious hunger situations.

Source: International Food Policy Research Institute

Genetically Modified Organisms (GMOs) are one possible solution to the problem of unsustainable diets. GMOs are **organisms**, such as plants or animals, which have **genes** that have been changed in a way that does happen in nature. Some scientists are working to develop GM (genetically modified) foods that are more nutritious, easier to grow, or less harmful to the environment, with the hope that these modified foods will be more sustainable.⁹

However, GMOs are quite **controversial** right now. Some groups are concerned about the long-term health effects of eating GM foods, the connections between GMOs and large corporations, and the effects of GM crops on the environment and local **ecosystems**.¹⁰ It's not yet clear whether the possible benefits of GMOs outweigh the potential risks, or what the UN's role should be in the debate.

Background

Development of GMOs

While GMOs have only been around for about 20 years, humans have been modifying plants and animals naturally for thousands of years. When dog breeders select for certain features, or gardeners only plant the tallest sprouts from a batch of seeds, they are making choices about what features they want the next generation to have. Over time, these choices can accentuate a feature that naturally exists in the plant or animal, or even create a brand new species.¹¹



Malnutrition isn't just a lack of food. Access to nutritious and sustainable food is important too!

Source: Charleston City Paper

In the late 1980's and early 1990's, scientists developed methods that allowed them to add new features to an organism by directly manipulating its genes. This technology was first used by seed developers to create crops that would be easier for farmers and food companies to use, such as building in resistance to crop disease, or making the food cheaper to produce in large batches.¹²

The first GMO to be sold commercially was a tomato called the Flavr Savr, which entered the market in 1994. A gene that makes tomatoes get soft when they ripen was modified to make the tomato firmer. The new tomato lasted longer on store shelves without rotting or bruising, saving money for supermarkets and food companies.¹³ This feature is still very useful to food companies, and you may recognize it the next time you bite into a particularly dense slice of tomato in a sandwich or salad.

What Problems Could GMOs Cause?

Five possible problems are common in the GMO debate:

- 1) allergic reactions,
- 2) **gene transfer**,
- 3) **outcropping**,
- 4) environmental effects, and,
- 5) long-term health effects.

No allergic effects have been found in GM foods that are being produced, but it is possible that a gene transferred to produce a benefit could also produce allergic effects from its original organism. Traditional foods are not usually tested for the ability to cause allergic reactions, but the FAO and WHO have developed testing standards for GM foods that are used by many countries.¹⁴

Gene transfer is the transfer of a gene from a GMO into people or bacteria after it's been eaten. This is very unlikely, but it could be quite harmful if it did occur.¹⁵

Outcropping is a possibility with GM crops. In the wild, related species sometimes mix their genetic material to produce hybrid offspring. For example, seeds getting blown between species of flowers and creating a new, mixed flower type. If GM crops are planted near traditional crops, it is possible for their seeds to mix. This was a problem last summer in the United States when GMO wheat plants mixed with traditional wheat in eastern Washington and Oregon. The wheat farmers who were affected were not able to sell to Japan and South Korea, which banned GMO wheat imports.¹⁶ Several countries have rules in place to prevent outcropping from happening, including requiring separation between the fields where GM and traditional crops are grown.¹⁷

In addition to outcropping, there are other environmental problems that can occur because of GMO use. Other organisms in the environment, such as insects or birds, may react to the GMO differently, and could be harmed. GMOs could be stronger than traditional organisms, and take over the local ecosystem, reducing its diversity. Finally, food corporations may use chemicals, such as **pesticides**, in combination with GMOs which can be harmful to the native species.¹⁸

In order to determine whether there are long-term health effects from consumption of GMO's, scientists must study people who consume GMOs over the course of many years. Because GMOs are relatively new, these studies are still underway. However, the WHO has not found any evidence GMOs are harmful to human health.¹⁹

Diversity of Food Sources

The FAO has found that only three crops provide 60% of the energy people consume from plants in the world: corn, wheat and rice. These foods provide quick energy, and can be cheap and convenient, but they are not rich in necessary vitamins.²⁰ As modern technology makes it easier to grow and transport these energy-rich foods, they become cheaper and easier for people to access. Unfortunately, these changes are making diets less sustainable, as these foods are not very nutritious, and use up many natural resources to grow and transport, like water and gasoline.²¹

As the world's population grows, the demand for food grows as well. Unsustainable farming methods are using up land and resources, making it difficult to continue growing enough nutritious food in the future. If it is not possible to continue growing food in this way forever, then we may need to grow new, more efficient foods.²² One way that GMOs can help in this circumstance is to produce modified versions of common that provide more nutrition than would be found in nature.



Regular rice (left) and Golden Rice (right)

Source: Golden Rice Info Centre

Golden Rice and Vitamin A Deficiency

Vitamin A deficiency (VAD) is a problem in half of the countries in the world, especially in Africa and Southeast Asia. Children are especially affected by VAD: it is the most common cause of preventable blindness in children and increases their chances of death or disease from infection.²³ VAD makes an interesting case study for the GMO debate because the solutions being developed include GM and non-GM methods.

UN Agencies like the World Health Organization have been distributing Vitamin A pills to children for over 15 years. These periodic high doses of Vitamin A can reduce the child mortality rate by as much as 25%, but they can be very expensive, and the logistics of getting these Vitamin A pills, along the instructions for their use, to people who are poor and isolated in rural areas can be very difficult and expensive. Even with these efforts, 6,000 children a day are dying due to VAD.^{24,25}

Golden Rice is a GMO that was developed as another way to distribute Vitamin A to those who need it. To create it, scientists replaced one of the genes in regular rice with a gene from corn, creating a new type of rice which can provide children with 60% of the Vitamin A they need a day. As the name suggests, this gene change also makes the rice yellow. Because rice is cheap and already a major part of the diets of many people suffering from Vitamin A deficiency, it is a very effective way to ensure even very poor or isolated communities can get enough Vitamin A regularly.²⁶



One in five children in Uganda suffers from Vitamin A deficiency. Sweet potatoes can help.

The Golden Rice project has been opposed by environmental groups, including Greenpeace, since its beginning, because of their concerns about GMO safety and the possibility that they will harm the environments they are grown in.²⁷ Some activists also argue that Golden Rice is being used by the GM industry to improve the image of GMOs. They believe that promoting highly visible not-for-profit projects like Golden Rice can be a strategic way for large food corporations to make GMOs seem more trustworthy.²⁸

Source: Martin Mulungu, Agfacts

Alternatives to Use of GMOs

GMOs are not the only solution to unsustainable diets, and it can be argued that there are better – or at least less contentious – ways to solve these problems. For instance, there are many nutritious foods that already exist in nature, but are not commonly eaten in certain cultures. The Director-General of Biodiversity International has called for societies to consider less-commonly-consumed plants and animals that might have more nutrients and help create sustainable diets. In Kenya, Biodiversity International helped make eating nutritious leafy green vegetables more common. The vegetables, while very nutritious, were not very popular in Kenya because they were

considered “poor people’s food.”²⁹

Nutritional problems can have deep roots, and there are solutions outside of food. In 2013, 400 farmers in the Philippines stormed and destroyed a Golden Rice research field. A farmer and member of the militant group responsible spoke with reporters and said that he believes that poverty is the cause of malnutrition, and the problem should be solved with better support from the government, not new GM crops.³⁰

Finally, if modifying food is the best solution, there are non-GM ways to do it. A project similar to Golden Rice is taking place in Uganda and Madagascar, where Vitamin A deficiency is a big problem. Scientists have bred sweet potatoes that provide high levels of Vitamin A. As with Golden Rice, this project uses a staple food as a way to increase access to Vitamin A. The primary difference between the two projects is that sweet potatoes provide some Vitamin A naturally, so the new sweet potatoes didn’t need to be genetically modified.³¹

CRITICAL THINKING

There are many different solutions to the problem of Vitamin A deficiency, but none of them are perfect. From a scientific point of view, Golden Rice is a good solution, but it is opposed by environmental groups and some of the people it’s supposed to help.

- Do you think there are enough good solutions to VAD without Golden Rice?
- Is it more important for a solution to be the most effective, or to be accepted and used by society?

Current Situation

Use of GMOs Worldwide

There are 17.3 million farmers growing GM crops worldwide.³² In American supermarkets, as much as 70% of the processed foods on the shelves can contain GM ingredients, especially corn, soy, sugar, and canola oil.³³ Supporters of GMOs say that use of GM crops over the past 20 years has increased agricultural production by over \$98 billion, and that GM foods have the potential to improve access to nutrition and a sustainable diet.³⁴ Opponents of GMOs point to the many groups of consumers who oppose the use of GMOs, and the possibility harmful effects because long-term studies have not been completed.³⁵

The WHO’s official position on GMOs is as follows: “GM foods currently available on the international market have passed risk assessments and are not likely to present risks for human health. In addition, no effects on human health have been shown as a result of the consumption of such foods by the general population in the countries where they have been approved.”³⁶



GMOs around the world.

Source: Huffington Post and Visua.ly

Pesticides and Environmental Impact of GMOs

The connection between GM crops and pesticides is the subject of very contentious debate. Some biotechnology companies create GM seeds that are resistant to pesticides, so that farmers can aggressively spray their fields to kill insects and other pests without harming the crops. It's a common strategy for companies to sell their brand of seed together with a pesticide that they also produce. Many opponents of GMOs connect GM farming practices with increased pesticide use.³⁷ Between 1996 and 2001, pesticide use increased by 239 million kilograms in the US alone on the three major GM crops: corn, soybeans, and cotton.³⁸

However, GM supporters say that GM crops are less damaging to the environment than non-GM crops which are grown in large, industrial quantities. GM supporters say that pest-resistant crops and other GM improvements have meant that 473 million kilograms of pesticides did not need to be sprayed.³⁹

The US state of Hawaii passed a law this fall banning companies from growing new GM crops on one of the state's major islands. Because of Hawaii's year-round warm weather, it has become the top producer of GM seeds, including seeds which are meant to be used together with pesticides. The seed industry contributes around \$144 million to the state's economy, and opponents to the law argue that Hawaiians will lose jobs if the GM industry has to move somewhere else.⁴⁰



The Non GMO Project verifies whether foods are GM-free. Even though GMO labeling isn't required, showing that food is GMO-free appeals to concerned customers and raises awareness about GMO labeling efforts.

Source: Non GMO Project, Getty Images

GMO Labeling

Many countries have laws requiring that foods containing GM ingredients be labeled so that consumers can know what they're eating and choose whether or not to consume GMOs. China and Brazil both require all foods with at least 1% GMO content to be labeled, and the European Union requires foods with 0.9% or more GMO content to be labeled.⁴¹ It can be very difficult to detect whether a food contains GM ingredients, and so very low amounts are hard to identify.⁴²

Consumers have been concerned about the trustworthiness of studies which show that GMOs are safe, and worry about the long-term health effects of GMO consumption. GMO-labeling advocates argue that consumers have a right to know what they are eating, and if GMOs are truly safe, corporations wouldn't oppose disclosing the GMO content of their products. However, GMO content genetic modification methods vary between foods, so not all cases are alike. Corporations argue that labeling is not necessary because there is no evidence that GM products are unsafe.⁴³

CRITICAL THINKING

- How does learning about the GMOs in the foods you eat make you feel?
- Would you like to know when there are GM ingredients in your food?
- Do you think non-GMO or GMO labels will change shoppers' minds about whether to buy GM foods?

International Action

National Laws

There is no international regulation of GMOs, but many countries have national laws about GMOs and how they can be labeled, transported, and grown. 64 countries, including China, Russia, Brazil, Japan, South Korea, and the European Union require that GM foods be labeled, and the EU has banned almost all GM crops from being grown in Europe.⁴⁴

Food safety has been important to citizens of Europe since the 1990's, and these concerns have impacted how GMOs were received and trusted in the Europe, and the EU first required GMO products to be labeled starting in 1997. Prior to the ban, the EU had required two sets of approval for growing GMOs: approval from the country they would be grown in, and approval from the European Commission, the body that leads the EU. Strict laws also regulate how GMOs can be marketed. Between 1991 and 1998, 18 GMOs were approved for marketing in the EU by the European Commission.⁴⁵

The United States does not have a GMO labeling requirement, but GMO labeling is a growing concern among American consumers, and the majority of American states are debating laws about GMOs.⁴⁶ Even if a country does not have laws about GMOs, when farmers grow GM crops, the laws in other countries affect where they can sell them. Most American companies which sell GM foods overseas already label them.⁴⁷

Codex Alimentarius: The International Food Code

The Codex Alimentarius Commission, called Codex, is responsible for compiling the Codex Alimentarius, is a collaboration between the FAO and the World Health Organization (WHO), and it is responsible for creating the Codex Alimentarius, the international food code.

The Codex Alimentarius is a set of standards and recommendations for food safety and trade, including guidelines for determining the safety of GM foods. While national governments are not required to follow Codex recommendations when creating laws for their own countries, they do impact international trade between countries.⁴⁸



US States which are debating GMO labeling laws.

Source: Huffington Post and Visua.ly

While normally a very obscure UN body, the Codex Committee on Food Labeling has been in the public spotlight recently, as there has been much debate over whether the wording of its new food labeling guidelines is in favor of GMO labeling. Officially, Codex is neutral on GMO labeling.⁴⁹

Cartagena Protocol on Biosafety

The Cartagena Protocol on Biosafety (CPB) is an environmental treaty that regulates the movement of GMOs that are alive, called Living Modified Organisms (LMOs), across international borders.⁵⁰ 130 countries have **ratified** the CPB, meaning that they have agreed to follow it. The CPB created an online “Biosafety Clearing-House” for countries to share information about LMOs, and it requires exporters to get permission from importers before they ship LMOs into their countries, as well as to include a disclaimer on packaging stating that they are not intending to introduce the LMOs into the environment. The purpose of the CPB is focused on protecting ecosystems from the introduction of living GMOs which might be harmful, and does not address food labeling or food safety, but it is a good model of an international protocol that is **binding**.⁵¹

Recommendations for Creating a Resolution

The FAO has an opportunity to come together and agree on standard international practices for GMOs. It is important for delegates to consider what is important for the international community to agree on, and what individual countries should decide on their own.

Delegates may wish to discuss which standards the FAO should recommend countries follow when creating national GMO laws, as well as determine international rules for selling, labeling, and researching GMOs, as well as whether the UN should take a stance on the connection between pesticide use and GM crops.

Delegates may encounter circumstances where there are differences between public opinion, government policy, corporate interests, and the needs of people suffering from malnutrition. It's important to represent the wishes of your own citizens while also keeping in mind what policies will be best for the world in the long-term.

“Because biotechnology is such a revolutionary science, and has spawned such a powerful industry, it has great potential to reshape the world around us. It is already changing agriculture and what many of us eat...”

Future generations are likely to look back to our time and either thank us or curse us for what we do - or don't do - about GMOs and biosafety.

Doing the right thing is not simple.”

- CBD and UNEP 2003

Source: UNEP Africa Environment Outlook 2, Our Environment, Our Wealth

Questions to Consider

1. Is hunger or poor nutrition a problem in your country? (TIP: check your country's FAO Nutrition Country Profile)
2. What crops are grown in your country, and what foods does your country eat? What role does farming play in your country's economy?
3. Are citizens of your country concerned about GM foods?
4. What companies that sell or grow GM foods impact your country and its economy?
5. Are there regulations regarding GM foods already in place within your country? Are there programs in place to support sustainable diets?
6. How can these national programs be adapted to the international community?

Research Aid

The website for the FAO provides background information on the committee as well as information on its current projects. The Nutrition Country Profiles will provide a concise summary of nutrition and hunger needs in your country.

- **Food and Agriculture Organization of the UN**, <http://www.fao.org>
- **FAO Nutrition Country Profiles**, http://www.fao.org/ag/agn/nutrition/profiles_en.stm

The CIA World Factbook is a useful resource for statistics about your country, such as its economy, population, major crops grown, and trading partners.

- **CIA World Factbook**, <https://www.cia.gov/library/publications/the-world-factbook>

The World Health Organization provides information on global health problems, and has evaluated GM concerns and benefits.

- **World Health Organization**, <http://www.who.int>
- **20 Questions on Genetically Modified Foods**, <http://www.who.int/foodsafety/publications/biotech/20questions/>

Evaluating Bias in Online Sources

When researching a contentious topic like GM foods, it's important to be aware of the sources you are using. Information on the internet can be posted by anyone, and may contain **bias**. When you find new information online, look at who the author is and ask yourself if they might have a reason to persuade you to think a certain way. In general, a trustworthy source is one that tells both sides of the story, and shows where its information came from.

Information from universities, government departments, and UN agencies is likely to be trustworthy. Talk to your teacher or librarian, or use some of the guides below, to help evaluate the bias in online sources:

- **Education Place, "Finding and Evaluating Web Sites"**
<http://www.eduplace.com/kids/usingweb/g6-8.html>
- **Memorial University Library, "How to Evaluate Internet Resources"**
<http://www.library.mun.ca/guides/howto/interneteval.php>

Terms and Concepts

Bias: Favoring one side of an issue over all others.

Binding: Required. If a country signs a binding agreement, it must follow it.

Controversial: Something that causes disagreements and debates.

Ecosystem: A system of living organisms and the environment around them.

European Union (EU): 28 countries, mostly located in Europe, which have agreed to make economic and political decisions together.

Food Security: Availability and access to food.

Genetically Modified Organisms (GMOs): Organisms which have genes that have been changed through a scientific process.

Gene Transfer: The movement of genes from one organism to another.

Micronutrient Malnutrition: Lack of a necessary micronutrient, such as a vitamin or mineral.

Nutritious: Efficient as food, good for health and sustaining the body.

Organism: An animal, plant or other living thing.

Outcropping: When GM crops mix with non-GM crops.

Overfishing: Fishing too much, so that the amount of fish is too low to match the current rate of fishing without running out.

Ratify: A formal way that a country agrees to follow a treaty or international agreement.

Reputable: Respected and trustworthy.

Scope: The range of topics that are dealt with. If a project has a large scope, it can do many things, but a project with a small scope will focus on only a few areas.

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