## What is GM food,.its benefits and dangers

Genetically engineered foods (also called genetically modified organisms, or GMO) have long been posed by scientists as a solution for food issues around the world, like feeding the growing global population. No doubt, GMO have enormous potential for providing solutions to many of the agricultural issues faced today: addressing famine and malnutrition in developing nations by producing higher yielding crops with extra nutritional value, or saving farmers time and money by creating herbicide-tolerant, pest-resistant, heartier plants. However, whenever scientific manipulation of nature occurs, it can result in unknown and unintended consequences.

Biotechnology, or the manipulation of genes in organisms, has been used to improve the traits of certain foods, like making crops resistant to pests or drought. A method using what is called recombinant DNA technology allows scientists to transfer genetic information from one organism to another, producing plants, animals, and even vaccines. The crops that are created from this process are referred to as genetically modified organisms, or sometimes frankenfoods, by opponents of the practice.

There are a few main types of genetic modification at this time: crops that are able to resist pests, disease, and other threats, crops that provide extra nutritional value, and those with industrial purposes that can be used in pharmaceuticals or as biofuels. High-yielding crops could allow farmers to create more food using fewer resources, including land.

Insects and weeds are two major threats that farmers face with any crops. Pesticides and herbicides have been created to address these issues, but these can be toxic and harmful to consumers. One alternative is to create plants that are themselves resistant to these threats. Corn, soybeans, cotton, rice, and potatoes are commonly modified to be insect- and herbicide-resistant. Bacillus thuringiensis (Bt) is one type of pesticide that has been added to plant genetics to create pest-resistance. This type of genetic engineering makes up the majority of GM crops. In 2010, up to 90 percent of U.S. Soybeans, and 70 percent of U.S. corn and cotton were designed to resist herbicide and insects.

The idea of fortified crops, which provide more nutrients, has been proposed as a method of fighting hunger in developing nations. Adding vitamins that do not occur naturally in commonly grown foods, like corn or rice, could help fight malnutrition. However, GM fortified produce has yet to been made commercially available. The USDA approved soybean oil with extra ocleic acid (beneficial fats) in 2010, which could have health benefits.

The type of genetic engineering that is used for industrial purposes has been used to create the biofuel ethanol, which is made from GM corn, potentially providing a solution for energy concerns.

When it comes to creating genetically engineered animal products, progress and acceptance has been much slower. Typically, genetic modification of animal products works to increase the amount of meat or milk the animal produces. A growth hormone known as rBGH (recombinant bovine growth hormones) has been approved by the FDA, but never approved for commercial use in Canada or the EU. The hormone causes increased milk production when given to cows. Genetic engineering has also been used to create larger fish, creating pigs with reduced phosphorus levels in their manure (called Enviropigs) or stopping the spread of animal diseases like the avian flu.

## Global Response to Genetically Modified Foods

European nations have been resisting genetically modified foods for many years, probably resulting from general lack of consumer confidence in food safety after issues like the Mad Cow Disease scare. As a result, the European Union has much stricter regulations on GMOs than the United States. The United States claimed that an EU ban on import of GM agricultural products violates international trade agreements, and filed a complain with the WTO along with Argentina, Canada, Egypt, Australia, New Zealand, Mexico, Chile, Colombia, El Salvador, Honduras, Peru, and Uruguay. These countries all produce genetically engineered agricultural products.

As a result, in 2003 the EU Committee on the Environment, Public Health and Food Safety began to require labeling on GM foods regardless of detectable presence of the DNA or protein in the end product, as well as making strict rules on the traceability of these engineered crops. They also required biotech companies to present more extensive risk assessments. The EU labels require food with any GE content to be labeled, including those with greater than 0.9 percent GE content. Biotech companies like Monsanto argued against labeling because it can imply that their products are inferior to traditionally grown crops, which has not been sufficiently proven. This stigma damages the reputation and sales of GM crops, the company said.

Now the EU has approved over thirty GE products for sale, many of which are soy and corn used in animal feed. Some GE crops have even been cultivated in the EU, like a type of potato

that recently made its way to Britain for field trials. Several EU countries currently ban GE cultivation completely: Austria, France, Germany, Greece, Hungary, and Luxembourg. Japan is another region that strongly opposes GM foods.

Like the United States, Canada both produces and uses GM foods, though government regulations require the biotech companies to supply scientific data before approval. While Australia allows GM foods to be imported from the United States, the country is also in dispute with the United States over the issue of labeling.

The United States grows 68 percent of the world's supply of genetically modified foods (which are mostly soybeans and corn), followed by Argentina with 23 percent, Canada with 7 percent, and China with about 1 percent. Other countries that grow GM foods include Australia, Bulgaria, Mexico, Romania, South Africa, Spain, Uruguay.

Farmers have been carefully selecting their best produce or livestock to use in methods of selective crop breeding for many years. This process could be considered the natural version of genetic modification: breeding for crops with specific desirable traits. Is genetic modification by scientists simply the next step in the evolution of food science?

Could GM foods be the solution to world hunger? Will genetic engineering of foods place too much power in the hands of corporations like Monsanto, or can governments successfully step in and create legislation and regulations on GM products? Could lab-grown meat become the next step in genetic modification of food? Should GM foods be banned, labeled, regulated, or allowed to mix in with traditionally grown foods, unmarked? Do consumers have the right to know whether their foods have been genetically engineered?

**Question**

1.What kinds of genetically modified food do you know?

2.Are you agree with GM food?why?

3.Please give us two advantages in GM food

4.Please give us two weak points in GM food

5.Please describe your view about the conflics between GMfood and human health.

6.Most of U.S corn are GM food,would you reject to taste or accept? why?

7.What is the most noticible problem you think about when it comes to creating genetically engineered animal products?

8.Fortified crops could be a way of fighting hunger in developing nation,if you growed up in one,would you support it?

9.If you were a scientist , what will you do to help food shortages?

10.If we really need to increase the amount of meat,what else way we can recommend?