Should the U.S. have tighter regulations on genetically modified food?

GETTING ORIENTED

The weekly passage addresses issues related to genetically modified foods. Here is some information that might be helpful to students less familiar with the topic.

Genetic Modification and Biotechnology

Although genetic modification and biotechnology are commonly used interchangeably, or to mean the same thing, genetic modification is a special set of technologies that changes the genetic structure of organisms, including plants, animals, and bacteria. Genetically modified foods are typically plants that have had genes transplanted or moved into them. The most common plant products that are genetically modified are soybeans, corn, canola, rice, and cottonseed oil. The transplanted genes allow faster growth, resistance to germs that cause disease, production of extra nutrients, and other benefits.

Undernourishment and Malnutrition

In 2009, there were an estimated 963 million malnourished people, the majority living in Asia. Many problems cause malnutrition. Sometimes, people just do not have enough to eat. In other cases, malnutrition happens when people have limited access to foods that are nutritious for health and growth. Working to improve nutrition is one of the most successful ways to help in a developing country. In Asian countries, the increased production of spirulina, a food supplement that contains a great quantity of protein, is one way that world hunger is being combatted. Other important efforts bring modern farming methods and investment to developing countries’ agriculture.

United States Food and Drug Administration (FDA)

The United States Food and Drug Administration (FDA) is an agency of the United States Government. The FDA is responsible for protecting and promoting public health. The Center for Food Safety and Applied Nutrition is the branch of the FDA that is responsible for ensuring the safety and accurate labeling of nearly all food products in the United States. When dealing with genetically modified foods, the FDA considers the safety of the final product, as well as the techniques used to create it. Although studying the final product tells whether or not a product is safe to eat, knowing the techniques used to create the product reveals what questions to ask in reviewing the product’s safety. That is how the FDA regulates both traditional food products and products made through biotechnology.
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EVIDENCE AND PERSPECTIVES

<table>
<thead>
<tr>
<th>Some may have this view:</th>
<th>But others may think:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Public</strong></td>
<td></td>
</tr>
<tr>
<td>Some people are comfortable eating genetically modified foods, since they look and taste the same as non-genetically modified foods. They think that, if they were dangerous, the FDA would have already banned them. They also realize that costs for food will be lower if there is less risk of insects destroying plants. They believe that, if these kinds of biotechnologies will help starving people, then that is a good thing.</td>
<td>Some people want to make sure that food is labeled clearly to inform the general public when they are eating genetically modified foods. They want more evidence that genetically modified foods aren’t dangerous before they can feel comfortable about eating them. In addition to more rules about labeling, they may want more regulations controlling genetically modified foods and more research on their safety.</td>
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| **Research Scientists**  |                       |
| Some research scientists, in this case genetic engineers, have spent many years and a lot of government money finding ways to produce genetically modified products. They have studied and experimented for many years to develop the ability to create genetically modified foods and ingredients. They feel confident that these foods are as healthy to eat as food that does not have genetic modifications. They also see their work as a way of reducing world hunger because more crops can more easily survive. | Some research scientists have doubts about genetically modified products. They may feel that more research needs to be done to fully understand the effects of genetically modified foods. They think that, until more research exists, there are still risks involved with eating genetically modified ingredients. They may want governments to regulate these foods more tightly for now. |

| **Farmers**              |                       |
| Some farmers believe that they can no longer make a living without growing genetically modified foods. These farmers may like genetically modified seeds that grow more easily and may feel they should be allowed to grow the plants that are most profitable. | Some farmers want to grow crops that are not genetically modified. They believe that food should be natural, but growing food in this way is more expensive and requires more work. They might fear that it will be impossible to compete with farms that only grow genetically modified crops. |

Additional Information

- Scientists first discovered that DNA can transfer between organisms in 1946.
- In 1994, the tomato was genetically modified for human consumption. This genetic modification allowed the tomato to delay ripening after picking.
- Argentina, Brazil, Canada, and India produce significant amounts of genetically modified crops.
- In 2011, 29 countries worldwide grew genetically modified crops from approximately 16.7 million farmers.
- Between 1996 and 2011, the total surface area of land prepared for genetically modified foods increased from 4,200,000 acres to 395,000,000 acres (see graph).
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Features of Academic Text: Word Choice

Before buying a snack, Alex checks the nutrition panel. He says that knowing the number of calories per portion helps him to make healthy choices. Nutrition panels are a relatively new feature on food packaging. In 1990, the U.S. government started requiring all food products to display information about sugar, fat, and other key ingredients. Now, about 90% of Americans want those labels expanded to show whether the food contains genetically modified (GM) ingredients.

Scientists genetically modify foods to make them tastier, healthier, or easier to grow. For example, to make “Bt corn,” scientists extract part of a bacteria’s DNA and insert it into corn DNA. Consequently, Bt corn produces a chemical that kills insects that try to eat it. Insects can destroy acres of crops and even cause starvation in some countries, but DNA modifications keep Bt corn safe from pests.

“Golden Rice” has been genetically modified to include vitamin A and iron, making it more nutritious than regular rice. GM foods like Golden Rice could help feed the 800 million undernourished people in the world.

Still, many are concerned that GM foods may not be safe to eat. They worry that consuming GM foods could have serious consequences, like causing allergies or cancer. They say that until long-term studies have proven GM foods safe, consumers should have the right to avoid them. For example, other advances in science—like adding lead to paint to make it shinier and last longer—were once celebrated, but later found to cause developmental problems in children. Over 60 countries require GM foods to be labeled, and most Americans think it is time that the U.S. does the same.

The Food and Drug Administration (FDA), a government agency that monitors food safety, insists that GM foods are similar to non-GM foods. The FDA says that no scientific evidence shows GM foods to be dangerous, so they don’t need to be labeled. Some people worry that these decisions are influenced by powerful businesses that produce GM foods. While waiting for the FDA to modify its position, many Americans are turning to their state governments to require GM labeling.

Genetically modified foods could help feed the hungry and help poor countries produce more food. But should we postpone enjoying the advantages of GM foods until we are absolutely sure they are safe? Should the U.S. government require GM foods to be labeled?
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GENERATING WORDS

Root Words

The root of a word is the base part of the word that helps you figure out what the whole word means. It gives the basic meaning. The meaning of the word can be changed by affixes.

The word genetically stems from the Greek root gen meaning birth, race, or kind (of something). There are many common words that have this root.

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
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<tbody>
<tr>
<td>genes</td>
<td>Genes are the elements from our parents that determine our genetic make-up.</td>
</tr>
<tr>
<td>genealogy</td>
<td>Genealogy is the history of our ancestors, where and who we came from.</td>
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<tr>
<td>generation</td>
<td>One meaning of generation is all the people of a particular group who were born at a similar time.</td>
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<tr>
<td>genocide</td>
<td>Genocide is the murder of a particular race or people group. (This word is similar to homicide, the murder of a human, or suicide, the murder of one’s self.)</td>
</tr>
<tr>
<td>genesis</td>
<td>The genesis of something is its beginning, birth, or creation.</td>
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<tr>
<td>generate</td>
<td>To generate something is to cause it to begin. You can generate an idea by suggesting it and allowing others to take the original idea and move forward with it. As a noun, generation can also mean the act of beginning or creating something.</td>
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</tbody>
</table>

Deepening Our Understanding

In order to understand an important word, we may need to think more deeply about what the word means. Sometimes, this includes thinking about what a word doesn’t mean. Look at the example to the right.

On a separate piece of paper, create a similar graphic organizer to the one shown here. Place the word “generation” in the middle and complete the rest of the organizer.

The organized murder of as many people as possible from a particular race, ethnic group, or religion by a government or group of people in power

Someone or a small group of people killing several members of a racial or religious group

The killing of millions of Jewish people during WWI

The killing of Sikhs in a Wisconsin temple

Rwandan Hutus killing nearly a million Tutsis

September 11th attacks

Some non-examples

define this word
different than...

te examples

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DEVELOPING DISCUSSIONS

Step One: In a group of four, brainstorm as many PRO and CON arguments for the topic: Should the U.S. have tighter regulations on genetically modified food?

Step Two: All group members memorize the list of PROs and CONs.

Step Three: Divide the groups of four into pairs and have a discussion by doing the following:
1. One partner is the “director;” the other is the “actor.”
2. The director claps and says, “Should the U.S. have tighter regulations on genetically modified food?: PRO!”
3. The actor gives 1-2 PRO reasons for tighter regulations.
4. The director claps and says “CON!,” and the actor uses a transition like “However...,” “On the other hand...,” or “Then again...” and gives a reason or two for not having tighter regulations.
5. The director claps again and says “PRO!,” and the actor uses a different transition and gives more PRO reasons. Repeat.
6. When finished, the director paraphrases what he or she heard and tries to guess which side the actor is really on.

What the ACTOR might say:
- One reason for tighter regulations on genetically modified foods is...
- Another reason is...
- Additionally, tighter regulations on genetically modified food means...
- However, or on the other hand, or then again...
- A reason to not have tighter regulations on genetically modified food is...
- Furthermore, we should not support tighter regulations due to...

What the DIRECTOR might say:
- Pro! or Con! 
- What I heard you say is...
- I believe you said...
- Correct me if I’m wrong, but I thought I heard you say...
- Based on what I heard, I think that you really believe that...

Step Four: Switch roles and repeat Step Three.