

PBS Proudly Presents:

# HARVEST OF FEAR:

Should We Grow

Genetically Modified Crops?



## Directions:

On the following pages, you will be asked the same question seven times: "*Based on what you now know, do you think we should raise genetically modified (GM) crops?*" Each time, you must answer YES or NO to that question, and each time, depending on how you responded, you will be directed to a page to read a counterargument meant to challenge your stance. Thus, this feature presents six arguments for growing GM crops and six against, but whenever you answer yes or no, you will only see one side of the argument -- the one meant to challenge your position. After answering the question for the seventh and final time, you will be able to reflect upon whether or not particular arguments cemented your position or convinced you to change your stance.

## Introduction

Industry, government, and many academic scientists tout the benefits of genetically modified (GM) foods for agriculture, ecosystems, and human health and wellbeing, including feeding a world population bursting at the seams. With equal passion, consumer groups, environmental activists, religious organizations, and some scientists warn of unforeseen health, environmental, and socioeconomic consequences.

The debate concerns something very personal to each of us: what we are eating. And whether you realize it or not, you've been consuming GM foods for some time. GM ingredients, in the form of modified enzymes, are found in virtually all breads, cheeses, sodas, and beers, and farmers have been raising GM food crops such as corn, soybeans, and potatoes since the mid-1990s. While you'll find few GM whole fruits or vegetables in your supermarket today, highly processed foods like breakfast cereals and vegetable oils very likely contain varying amounts of GM ingredients, because food companies pool raw materials like soy and corn from many sources into a single processing stream.

GM crop farming is expanding rapidly around the world. Global acreage of GM crops has risen 25-fold in just four years, from approximately 4.3 million acres in 1996 to about 100 million acres in 1999. Worldwide sales of GM foods rocketed from an estimated \$75 million in 1995 to a staggering \$2.3 billion in 1999.

It's too early to know which of the aids or ills foreseen for GM foods will materialize. In the meantime, GM technology raises thorny questions of science, ethics, law, and economics that need to be thoroughly debated.

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 2; "NO" go to page 3**

**What if you knew that detractors fear that GM foods might pose health risks for certain people?**

Some people, including children, are highly allergic to peanuts and other foods. Some critics of GM foods feel the possibility exists that those genetically modifying food crops may unintentionally introduce a new allergen. Given that genes can be introduced from unrelated species -- for example, a fish gene can be put into a plant -- some critics argue that the possibilities of allergies might be greater than with traditionally bred crops.

Another potential hazard to human health is the possibility that bacteria in our guts could pick up antibiotic-resistance genes found in many GM foodstuffs. (Food geneticists often add such genes to GM plants as 'markers' to tell them which plants have taken up exotic genes.) If this transfer happens, in principle it could exacerbate the already worrisome spread of disease-causing bacteria that have proven able to withstand our antibiotics.

"Today the vast majority of foods in supermarkets contain genetically modified substances whose effects on our health are unknown. As a medical doctor, I can assure you that no one in the medical profession would attempt to perform experiments on human subjects without their consent. Such conduct is illegal and unethical. Yet manufacturers of genetically altered foods are exposing us to one of the largest uncontrolled experiments in modern history."

--Dr. Martha R. Herbert, pediatric neurologist [1]

"Lots and lots of people -- virtually the entire population -- could be exposed to genetically engineered foods, and yet we have only a handful of studies in the peer-reviewed literature addressing their safety. The question is, do we **assume** the technology is safe based on an argument that it's just a minor extension of traditional breeding, or do we **prove** it? The scientist in me wants to prove it's safe."

--Dr. Margaret Mellon, director of the agricultural and biotechnology program, Union of Concerned Scientists [2]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 4; "NO" go to page 5**

**What if you knew that proponents assert that GM foods will promise many health benefits?**

Advocates hold that GM foods will leave traditional crops in the dust. They will have longer shelf life. They will be better for us, with some products already in the works benefiting our waistlines (low-calorie sugar beets and oils with lower saturated fat content, for example) and others bearing higher nutritional content (high-fiber corn and high-starch potatoes). And they will be safer to eat. GM corn has lower fungal toxin content than non-GM corn, and farmers typically produce GM crops using fewer pesticides, herbicides, and fertilizers.

GM foods will have even greater benefits for the world's poor, supporters state. In developing countries, malnutrition is a grave problem, because people often have to rely on a single staple, such as rice, that on its own doesn't supply sufficient nutrients. Food scientists hope to genetically modify crops to add vitamins and minerals. One of the most promising is "golden rice," which can stimulate our bodies to generate vitamin A. In the developing world, vitamin-A deficiency kills two million children each year, and another 500,000 become permanently blind.

Eventually GM plants will serve as environmentally friendly 'factories' that mass-produce useful substances such as pharmaceuticals. Scientists are hard at work, for instance, trying to genetically add vaccines to tomatoes or bananas. Traditional vaccines are costly to manufacture and require specialized storage not always available in developing countries. "Eatable vaccines," developers say, will be easier to ship, store, and administer.

"The benefits of biotechnology are many and include providing resistance to crop pests to improve production and reduce chemical pesticide usage, thereby making major improvements in both food quality and nutrition."

--World Health Organization Consultation on Biotech & Food Safety [3]

"Biotechnology will be a crucial part of expanding agricultural productivity in the 21st century. If safely deployed, it could be a tremendous help in meeting the challenge of feeding an additional three billion human beings, 95 percent of them in the poor developing countries, on the same amount of land and water currently available."

--Ismail Serageldin, The World Bank [4]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 4; "NO" go to page 5**

**What if you knew that many feel GM crop technology will hurt small farmers?**

Critics of GM agriculture insist that patenting genetically altered crops, as agribusiness is rushing to do, will make small farmers indentured to big firms. Monsanto, one of the biggest players in the field, is currently suing dozens of North American farmers whom it claims have raised its patented GM crops without paying for the privilege. (Farmers have responded that pollen from Monsanto crops blew in from neighboring fields.)

Some fear that GM crops might prove too expensive for poor farmers in developing countries, thus further widening the gap between rich and poor, or that they could repeat an often unspoken side effect of the Green Revolution. In countries like India, higher yields were achieved at such a cost in inputs that smaller farmers were often no better off, and many were forced into debt or off their land.

Even if farmers in developing countries don't grow GM crops, they could still be hurt by them. If GM technology enables the industrial North to raise crops it traditionally imported from the developing South, it could take a heavy toll on Southern farmers. In 1996, the Canada-based non-governmental organization Rural Advancement Foundation International (RAFI) called attention to a newly issued patent for quinoa, a high-protein grain traditionally grown in the Andes. The patent was awarded to researchers at Colorado State University, who were trying to improve yields of the crop. As RAFI pointed out, if U.S. farmers started growing quinoa, Bolivian farmers would take a severe blow. GM crops will also further our reliance on vast monocultures, objectors state. (Just 15 food crops today supply 90 percent of the world's food and energy intake.) Many small farmers in the developing world maintain a rich diversity of flora; in India alone, farmers raise some 50,000 plant varieties. These plants thrive under different climatic and environmental conditions, providing insurance against drought or disease or locust swarms.

Farmers of monocultures are vulnerable to lethal attacks by disease and pests. In the 1970s, for example, corn blight devastated the U.S. corn crop; in 1975 Indonesian farmers lost half a million acres of rice to the rice hopper insect. GM monocultures will possess similar susceptibilities. If pests evolve tolerance to a crop's built-in insecticide, say, or if weeds develop immunity to weed killers sprayed over fields of herbicide-resistant GM plants, that crop -- and the people who count on it -- could suffer.

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 6; "NO" go to page 7**

**What if you knew that GM patrons insist that farmers will reap great benefits from biotechnology?**

Insect pests cause stupendous crop losses every year, resulting in harsh financial setbacks for farmers. With crops genetically engineered to resist pests, GM proponents say, growers can avoid such losses and bring their produce to market at less cost. By the same token, weeds rob crops of vital nutrients. To do away with them, farmers often have to spray large amounts of weed killers, a time-consuming and expensive process. With, say, GM soybeans that are resistant to a single broad-spectrum herbicide, farmers only need to use a single weed killer rather than multiple kinds, and they may have to make only a single application rather than several.

Using a single broad-spectrum herbicide can also help reduce land degradation, advocates say, by enabling farmers to optimize their use of "no-till" agriculture. Leaving dead plants where they lie rather than plowing them into the ground can reduce soil erosion by 70 percent, industry officials claim. Soil erosion is a serious global problem, with farmers losing an estimated 25 billion tons of topsoil through runoff and wind every year.

Scientists are developing GM technologies to help farmers battle other scourges as well. To reduce losses from sudden frosts, which can kill young plants, geneticists have experimented with putting an antifreeze gene into tomato plants. To help crops cope with disease, researchers are trying to genetically confer disease resistance to food plants. And to help farmers in an increasingly land-hungry world sow crops on marginal land, agricultural scientists are working to craft plants that are drought and salt-tolerant.

Perhaps most important, GM crops will improve harvests, backers profess. Monsanto reports that yields from GM crops of corn, cotton, and soybeans in the U.S. have increased by between 5 and 8 percent. This compares to increases of 1 to 2 percent expected from new conventional varieties. Ultimately, some proponents warrant, biotech could triple crop yields without requiring any additional farmland.

"We'll soon be able to produce more crops with less pesticide, less fuel, less fertilizer, fewer trips over the field. We'll produce much more with much less.... I now think that within a decade it will be possible to have crops that can withstand the stresses of early spring and late fall to such an extent that farmers could plant two crops of corn, soybeans, or wheat each year." --Dr. Ray Bressan [5]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 6; "NO" go to page 7**

## What if you knew that opponents fear that GM crops could harm the environment?

6

Many critics believe we're opening a Pandora's lunchbox with GM technology, that raising GM crops is an uncontrolled experiment with unknown consequences for surrounding ecosystems. Remember, they admonish, the ravages of the now-banned pesticide DDT. Or PCBs. Or dioxin. Or leaded gas.

One of their greatest worries is that GM crops could harm other wildlife. A 1999 article in **Nature** about detrimental effects on monarch butterflies stoked that fear. Cornell University researchers found that only 56 percent of monarch larvae survived when fed milkweed plants covered in GM corn pollen, whereas all those fed milkweed leaves with traditional corn pollen lived. About half of monarchs in the U.S. spend their summers dining on milkweed in corn-growing regions, so to environmental activists this proved dire news.

GM defenders point out that the monarch study was held in a laboratory, not in the field, and that follow-up studies by the Department of Agriculture, Food and Drug Administration, and others suggest the original study may have been flawed. But those concerned about the study say that, at the least, it should serve as a cautionary tale for those who dread unwittingly harming species.

Citing the case of mosquitoes that became tolerant of DDT, critics also shudder at the thought that insects will become 'superbugs' resistant to pesticides engineered into GM crops. By the same token, they also predict the evolution of 'superweeds' that become immune to a broad-spectrum weed killer after crossing with and assuming the herbicide-resistant gene from a closely related GM plant. GM crops themselves can become weeds, they note. Canadian farmers have reported that herbicide-resistant canola plants have invaded nearby wheat fields with the impunity of a feared superweed.

Naysayers also worry that viruses will snatch resistance traits from GM crops bearing genes from crop viruses. These gene-thieving viruses might then evolve into entirely new strains that could infect a whole range of plants previously unaffected.

"Unrelated multiple side-effects of introduced genes cannot be predicted in advance and are not always visible or easily detected."

--Dr. Ricarda Steinbrecher, Women's Environmental Network, London [6]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 8; "NO" go to page 9**

## What if you knew that advocates maintain that GM technology will help the environment?

7

In the U.S. alone, farmers spray, spread, and otherwise administer more than 970 million tons of insect- and plant-killers every year. These pose threats to the environment. Pesticide residues linger on crops and in soil, find their way into the guts of wildlife that eat contaminated foliage, and leach into groundwater and wash into streams.

If a crop boasts its own ability to resist invertebrate predators, then farmers can use far fewer chemicals. In 1999, according to the Environmental Protection Agency, cotton farmers in states raising significant amounts of cotton genetically modified to withstand pests sprayed 21 percent less insecticide -- that is, they sprayed one to two times rather than eight to ten.

Similarly, endorsers profess that farmers raising crops bearing herbicide resistance -- such as those using the Monsanto-crafted soybean that is resistant to the company's broad-spectrum weed killer Roundup -- will use fewer chemicals in a season than they would while growing conventional soybeans.

Industry spokespersons acknowledge the possibility that cross-pollination could occur between some types of GM crops and weeds. But they claim there are ways around that, such as creating GM crops that are male-sterile -- that is, produce no pollen -- or modifying a GM plant so its pollen doesn't have the introduced gene. As for the danger of pests growing tolerant of plant-borne insecticide, farmers can create buffer zones of conventional crops around GM fields to give harmful insects something to feed on, reducing the selection pressure to adapt to the anti-pest plant. Buffer zones would also deter cross-pollination and provide a refuge for harmless and beneficial insects.

"The benefits of biotechnology are many and include providing resistance to crop pests to improve production and reduce chemical pesticide usage, thereby making major improvements in both food quality and nutrition."

--World Health Organization Expert Consultation on Biotechnology and Food Safety, October 1996 [7]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 8; "NO" go to page 9**

**What if you knew that many people feel genetically modifying organisms goes against Nature?**

Many opponents of the genetic revolution -- whether it involves sequencing the human genome, owning genetic material, or devising GM crops -- pronounce that fiddling with the genetic makeup of plants and animals is unnatural. Nature takes millions of years to effect genetic change. What right do we have to make changes overnight, as it were?

Nature also does not mix apples and oranges, much less flounder and strawberries. (Scientists placed an antifreeze gene from the fish into the fruit in a failed attempt to help strawberries withstand frost.) In short, do we have the wisdom to substitute human for natural selection? To essentially play God?

Many argue we do not, and that such acts are immoral. For some, GM technology flies in the face of cherished principles about the relationship between humanity and nature. If you are vegetarian, how would you feel if you learned that a vegetable you just ate bore an animal gene? For others, such pursuits offend deeply held religious beliefs. If you are observing kosher dietary laws, how would you feel knowing the tomato you just enjoyed in your salad carried a pig gene? For some people, genetic manipulation is nothing short of sacrilegious.

Such detractors are horrified by the thought that the dozens of GM crops so far approved for use in the U.S. and elsewhere are just the vanguard of an army of GM flora about to appear. In coming years, they say, we will see such oxymoronic man-made natural creations as GM trees and GM ornamental plants. Even now, Monsanto is developing new varieties of GM grass that will give homeowners the chance to choose the color of their front lawns.

"If Nature has spent millions of years building a structure with natural boundaries, it must be there for a purpose. It is there to guide the evolution of life and to maintain its integrity. Using genetic engineering in agriculture is like trying to fix something that has nothing wrong with it in the first place."

--Dr. Michael Antoniou, Senior Lecturer in Molecular Genetics, GKT Medical School, Guy's Hospital, London, U.K. [8]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 10; "NO" go to page 11**

**What if you knew that scientists submit that genetically modifying plants is completely natural?**

Genetic modification couldn't be more natural, geneticists say. Plants (and animals) genetically modify themselves all the time. That's the basis of evolution. We've been genetically modifying plants (and animals) for millennia. That's the basis of agriculture.

Our manipulation of a single mustard species has generated such diverse vegetables as broccoli, Brussels sprouts, and cabbage. Altogether, the wild ancestors of grapes, potatoes, and all other fruits and vegetables you find today on grocery store shelves are but pale shadows of their modern, highly modified descendants. All have gone through countless generations of careful hybridization and genetic breeding to improve yields, taste, size, and texture.

Modern GM methods are simply more precise, scientists stress. Whereas traditional plant breeding involves thousands of shared genes every time two plants are crossed, GM technology allows, if desired, for the exchange of a single gene between plants. GM procedures are also much faster. In months or years, molecular scientists can accomplish the same degree of alteration that might have taken Nature millions of years to achieve.

"Biotechnology's been around almost since the beginning of time. It's cavemen saving seeds of a high-yielding plant. It's Gregor Mendel, the father of genetics, cross-pollinating his garden peas. It's a diabetic's insulin, and the enzymes in your yogurt...."

--Dan Glickman, U.S. Department of Agriculture, March 13, 1997 [9]

"All plants, and all animals including humans, are genetically modified. That is what evolution means. They are genetically modified by natural selection of random mutations and recombinations. Some, such as maize, wheat, cabbages, and roses, are additionally modified by domestic breeding. And some are modified by engineered mutation or recombination. Any of these three kinds of genetic modification can have desirable or undesirable consequences."

--Prof. Richard Dawkins, author and expert on evolutionary genetics [10]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 10; "NO" go to page 11**

**What if you knew that many critics inveigh against biotech companies for being profit-driven, with little concern for potential risks to people or nature?**

GM seed firms invest heavily in research and development, and naturally, they want to recoup their investment. But in their rush to secure patents and reap profits, critics contend, big biotech firms are deliberately over-promoting the benefits of GM technology and underestimating possible health, socioeconomic, and environmental hazards.

Detractors say these companies are also concentrating their efforts in high-volume crops, such as soybeans, corn, and cotton, and not in crops that might help feed the billions of people who live in poor countries. A World Bank report in 1997 found only four "coherent, coordinated" GM research programs on developing-world crops at the time.

This "greed-not-need" ethic, GM opponents assert, may soon operate in an Orwellian agricultural climate, in which the power to produce and distribute food is concentrated in the hands of a few gigantic biotech firms. In 1998, the top ten seed companies controlled an estimated 30 to 40 percent of worldwide seed sales, which reach \$45 billion a year.

"The dramatic increase in the development, marketing, and sale of genetically modified seed and crops has far more to do with inflating corporate profits than with the sustainability of America's family farmers or the health of its consumers."

--Howard Vail, president of Farm For Profit Research & Development, a sustainable agriculture organization based in Embarrass, MN [11]

"The feeding-the-world argument is a very carefully engineered P.R. exercise to create some moral legitimacy for this technology."

--Brian Halweil, analyst at the Worldwatch Institute, Washington, D.C. [12]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 12; "NO" go to page 13**

**What if you knew that companies that fashion GM seeds maintain that GM crops hold the greatest hope for adequately feeding our rapidly expanding world population?**

Biotech spokespersons have argued that, while the industry is indeed concerned about the bottom line, it is primarily driven by research and innovation. Their argument is straightforward: Innovation is the only way to meet the world's burgeoning needs for food and medicines in a rapidly shrinking and increasingly scarred natural environment. Innovation requires costly and time-consuming research and testing, which will only happen if it's paid for. The best way to ensure it's paid for is through intellectual property protection. Patents should operate worldwide, they maintain, because markets are increasingly global in nature.

The result of this innovation will be GM crops that will offer our best chance to adequately address the challenge of feeding the estimated six billion people who, in as few as 50 years by some estimates, will join the six billion of us already here. GM crop farming holds out greater promise than conventional farming of boosting production on the same amount of ground, adherents say, and of raising crops where none could grow before, such as on salt-laden land. In increasing yields and making marginal lands productive, GM promoters insist, lie our only means of staving off widespread famine in developing countries in the coming decades.

"The possibility that (biotech) crops could make a substantial contribution to providing sufficient food for an expanding world is, on its own, a solid reason for engaging in the research that underlies their development."

--The Nuffield Council on Bioethics, 1999 Report [13]

**Based on what you now know,  
Do you think we should grow GM crops?  
"YES" go to page 12; "NO" go to page 13**

**What if you knew that many critics assert that GM foods suffer from dangerously poor oversight and regulation?**

Anti-GM food activists have leveled much of their ire at the United States, which produces the bulk of the world's GM foods. (In 1998, American farmers raised 74 percent of all GM crops.) Biotech firms, detractors maintain, have been developing and deploying GM crops too quickly and too broadly, without adequate testing or public debate. And the three government bodies that oversee the industry -- the Food and Drug Administration (FDA), the Department of Agriculture, and the Environmental Protection Agency -- are too lax in their scrutiny and regulation, they say.

The FDA, for one, has long maintained that most GM foods are "substantially equivalent" to unmodified foods and are thus not subject to FDA regulations. Biotech companies are not required to consult with the FDA on new GM foods, and even those that voluntarily do so do not have to follow the FDA's recommendations. Even a new FDA plan announced in early 2001 to review new GM foods for safety falls far short of the current surveillance of food additives, critics say.

Labeling is another issue that raises the hackles of anti-GM food activists. In the U.S., producers do not have to label GM foods. The result, those who denounce the policy say, is that you as a consumer don't know what you're eating, you don't have the option of choosing not to buy foods with GM ingredients, and if you get sick from a GM food, no one will be able to trace your illness back to its source.

"[B]iotechnologies...cannot be evaluated solely on the basis of immediate economic interests. They must be submitted beforehand to rigorous scientific and ethical examination, to prevent them from becoming disastrous for human health and the future of the Earth."

--Pope John Paul II [14]

"Now is the time, while agricultural biotechnology is still young, for Congress and regulatory agencies to create the framework that will maximize the safe use of these products, bolster public confidence in them, and allow all of humankind to benefit from their enormous potential."

--Dr. Michael Jacobson, Center for Science in the Public Interest [15]

**Based on what you now know,  
Do you think we should grow GM crops?  
See "The Assignment" on page 15**

**What if you knew that GM seed companies maintain that GM crops are the most thoroughly tested and highly regulated food plants out there?**

Biotech firms hold that every GM food crop is thoroughly tested for possible health effects. They conduct these in-depth analyses, they say, because they are legally required to ensure foods they sell meet federal safety standards.

Industry scientists start by comparing a GM plant with conventionally bred plants of the same variety. Their goal is to see whether an introduced gene alters the GM plant's chemical makeup and nutritional value. If the protein made from the new gene is the only discernible difference between the two plants, scientists test that protein for toxicity by feeding it to animals in amounts thousands of times higher than a person would ever eat. Scientists also test for allergy-inducing potential by checking the chemistry of each new protein against those of about 500 known allergens.

Industry spokespersons argue the testing system has worked well. When scientists realized a gene from Brazil nuts they were planning to splice into soybeans might sicken people harboring allergies to nuts, they discontinued the experiment. Similarly, when other researchers discovered that a protein in one type of GM corn might be allergenic, regulators approved that corn only for animal feed.

Biotech firms point out that not one but three U.S. government agencies have their say about each GM crop. The Department of Agriculture judges whether it is safe to grow. The Environmental Protection Agency (EPA) assesses whether it's safe for the environment. And the Food and Drug Administration (FDA) deems whether it's safe to eat. Under pressure from activists, these agencies have stepped up their vigilance. In 2000, the EPA began requiring farmers to plant 20 percent unmodified corn whenever they planted Bt corn (a GM corn modified to contain a natural pesticide). And in early 2001, the FDA proposed to begin reviewing all new GM foods for safety.

"All of our products, including those based on biotechnology, undergo thorough human, animal, and environmental safety evaluations. In order to be released commercially, they have to obtain the respective regulatory authorization. This involves rigorous governmental safety reviews and approval processes."

-- Aventis CropScience website, a world leader in plant biotechnology [16]

**Based on what you now know,  
Do you think we should grow GM crops?  
See "The Assignment" on page 15**

All information available at <http://www.pbs.org/wgbh/harvest>

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- 10: Letter to **The Independent**, London, 8/14/98.
- 11: From a 11/13/98 press release, [www.farmforprofit.com/PRels.html](http://www.farmforprofit.com/PRels.html).
- 12: Quoted in "Critics of Biotechnology Are Called Imperialists," by Andrew Pollack, **New York Times**, 2/4/01.
- 13: Quoted in "Why Biotechnology Matters," [www.biotechbasics.com](http://www.biotechbasics.com).
- 14: From a speech to an estimated 50,000 farmers at the Vatican on November 11, 2000. The speech, "Jubilee of the Agricultural World, Address of John Paul II," can be found at [www.vatican.va/holy\\_father/john\\_paul\\_ii/speeches/2000/oct-dec/documents/hf\\_jp-ii\\_spe\\_20001111\\_jubilagric\\_en.html](http://www.vatican.va/holy_father/john_paul_ii/speeches/2000/oct-dec/documents/hf_jp-ii_spe_20001111_jubilagric_en.html)
- 15: Quoted in "Gene Altered Foods: A Case Against Panic," by Jane Brody, **New York Times**, 12/5/00.
- 16: The Web site address is <http://212.38.30.154/cropsc/position/position.htm>.

**The Assignment**

- **Based on what you now know, do you think we should grow genetically modified crops? State your position and briefly explain the six arguments presented that support your position.**
- **Choose one argument and explain why, in your opinion, it is the most persuasive argument that supports your position.**
- **Discuss an argument for or against the genetic engineering of crops that you were unaware of (or least familiar with).**
- **Which of the included quotations had the greatest impact on you? *The quotation you select does not necessarily have to match your final position.***

