



The Facts About Biotech Crops

Biotech crops have been a part of agriculture across the globe for more than a decade. With more than 1 billion acres (400 million hectares) planted worldwide, the benefits of GM crops have proven out with significant positive impacts on the economics of farmers, along with positive impact on the environment.

What is the difference between GM (genetically modified) crops and plants from conventional plant breeding? Here are some key facts about hormones:

- GM crops are made using the modern tools of biotechnology and because of this, many have questioned how the safety compares to plants derived through traditional breeding.
- The purpose of GM crops and conventional crops is the same: To produce a superior plant varieties with superior characteristics that make them better to grow or more desirable to eat.

“Traditional cross (plant) breeding requires the mixing of thousands of genes between two plants in the hope of getting the desired trait. With modern biotechnology, you can choose the specific characteristic you want and add that single feature to a seed. The difference between these two techniques is dramatic. Imagine trying to add one word of Spanish to an English dictionary. With traditional plant breeding, you’d have to mix both dictionaries together and hope that the word you wanted ended up in the English version. Of course, lots of other words you weren’t interested in would have been added at the same time. Plant biotechnology allows you to choose and move the single characteristic you want – it’s streamlined, efficient, and produces superior results.”

American Dietetic Association Biotechnology Resource Kit, 2000



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Adoption Worldwide

- Farmers around the globe have turned to biotechnology to enhance yields, while improving their stewardship of the land and resources.
- In 2007, 23 countries planted biotech crops on 114.3 million hectares. Of these, 12 countries are developing nations.

Global Area of Biotech Crops 1996 to 2007		
	Hectares (Million)	Acres (Million)
1996	1.7	4.3
1997	11.0	27.5
1998	27.8	69.5
1999	39.9	98.6
2000	44.2	109.2
2001	52.6	130.0
2002	58.7	145.0
2003	67.7	167.2
2004	81.0	200.0
2005	90.0	222.0
2006	102.0	252.0
2007	114.3	282.0
Total	690.9	1,707.3

Increase of 12%, 12.3 million hectares (30 million acres) between 2006 and 2007.
Source: Clive James, 2007.

Global Area of Biotech Crops 2006 and 2007: by Country (Million Hectares)

Country	2006	2007
USA*	54.6	57.7
Argentina*	18.0	19.1
Brazil*	11.5	15.0
Canada*	6.1	7.0
India*	3.8	6.2
China*	3.5	3.8
Paraguay*	2.0	2.6
South Africa*	1.4	1.8
Uruguay*	0.4	0.5
Philippines*	0.2	0.3
Australia*	0.2	0.1
Spain*	0.1	0.1
Mexico*	0.1	0.1
Colombia	<0.1	<0.1
Chile	-	<0.1
France	<0.1	<0.1
Honduras	<0.1	<0.1
Czech Republic	<0.1	<0.1
Portugal	<0.1	<0.1
Germany	<0.1	<0.1
Slovakia	<0.1	<0.1
Romania	0.1	<0.1
Poland	-	<0.1
Total	102.0	114.3

*Biotech mega-countries which grew more than 50,000 hectares, or more, of biotech crops in 2007.

Source: Clive James, 2007.

Human Safety

- *With more than 1 billion acres of biotech crops planted, there have been ZERO reliably documented human or animal safety issues.*
- Foods derived from biotech crops have undergone more testing than any other foods in history.
- 25 Nobel Prize winners and more than 3400 prominent scientists worldwide have expressed their endorsement of the safety and advantages of biotech crops as a way to safely and efficiently improve food production.
- A multitude of international organizations have endorsed the safety of biotech crops, including the World Health Organization, the Royal Society (UK), the National Academy of Sciences, the Food and Health Organization of the United Nations, the European Commission, the French Academy of Medicine, and the American Medical Association.

Environmental Impact and Benefits

- By the year 2050, there will be over 9 billion people living on this planet. What this means is that we will need to figure out how to feed 3 billion more people in less than 50 years.
- A study assessing the global economic and environmental impacts of biotech crops for the first nine years (1996-2004) of biotech adoption showed that the use of technology has reduced pesticide spraying by 172 million kg and has reduced the environmental footprint by 14%.

- In the US, the adoption of biotech crops has resulted in pesticide use reduction of 46.4 million pounds in 2003.
- The use of biotech cotton in China resulted in pesticide use reduction of 78,000 tons of formulated pesticides in 2001. This corresponds to about a quarter of all the pesticides sprayed in China in the mid-1990's.
- The use of herbicide tolerant crops has facilitated the continued expansion of conservation tillage practices, resulting in reduction of tractor trips across fields and soil savings of nearly 1 billion tons of soil per year.

Frequently Asked Questions

Why produce GM crops?

- A plant breeder traditionally tries to bring the genetics of two particular plants together through cross breeding to enhance the genetics and create a superior plant. With biotechnology, the goal is the same. However, the efficiency and accuracy of breeding is significantly enhanced as the breeder is able to specifically select a gene to enhance the end result.
- This powerful tool allows plant breeders to do faster what they've been doing for years - breeding plants to create superior plant varieties - but without the limitations of conventional breeding.

What are the potential benefits of GM crops?

- The benefits of biotech crops are clear after more than a decade and over a billion acres planted worldwide:
 - > Increased yields
 - > Reduced pesticide use
 - > Increased farm profits
 - > Improvement in health and the environment
- Future benefits from emerging biotechnology traits include:
 - > Rice enriched with iron and vitamin A
 - > Potatoes with higher starch content
 - > Edible vaccines in maize and potatoes
 - > Maize and corn varieties able to grow in tough conditions
 - > Healthier oils from soybeans and canola

Value of Biotech Crops

- Farmers have increased farm income through increased yields and reduced input costs. The estimated improved profits over the first ten years of biotech use is at \$27 billion.
- Research indicates that the benefits of GM crops is consistent worldwide, with gains being similar amongst both small scale and large scale farmers.



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