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BIOTECHNOLOGY
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BIOTECHNOLOGY FOOD FACTS

HELPING PROVIDE MORE FOOD






Biotechnology is Helping
Increase Global Food Production



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Did You Know?

-  The world's population has grown nearly four-fold over the last century and is projected to rise from more than 6.6 billion people today to more than 8 billion by 2030.¹ In the U.S., population has tripled over the last century.² Since 2000 alone, the U.S. has grown by 20 million people, more than the population of the state of New York.³
-  At the same time, the world's hungry and chronically-malnourished totals 830 million people, despite global pledges and international efforts to improve food security.⁴
-  Feeding our growing population over the next quarter century will require doubling food production and improving food distribution.⁵ Accomplishing this will necessitate significant increases in the amount of food produced per acre, or crop yield.
-  We will have to offset losses due to drought and climate change, which many climatologists believe will increase in the years ahead. It has been predicted that two out of three people will live in drought or water-stressed conditions by 2025.⁶
-  Already biotechnology is preventing the loss of billions of pounds of important commodity crops such as corn and soybeans, and is expected to make an even larger yield contribution in the future.⁷

Continued




Biotech crops not only increase productivity, they also allow harvests to become more predictable from year to year. Stable food production is particularly important in developing countries.




In South Africa, large and small-scale farmers have adopted biotech maize, soybeans, and cotton, which has contributed to an estimated U.S. \$156 million increase in farm income from 1998-2006.⁸


Biotechnology is Already Helping and Has Potential to Do More

 Crops improved through biotechnology are increasing yields worldwide. Higher-yielding crops can help feed more people and boost incomes for poor farmers. For instance:

- In South Africa, large and small-scale farmers have adopted biotech maize, soybeans, and cotton, which has contributed to an estimated U.S. \$156 million increase in farm income from 1998-2006.⁸
- Biotech cotton (resistant to the often-devastating bollworm insect) raised yields 29% in India, and contributed to a 78% increase in income for many of the country's poorest farmers.⁹
- Enhanced varieties of corn have boosted yields worldwide—by as much as 61% over traditional varieties in the Philippines,¹⁰ where average income for biotech corn farmers has increased 34%.¹¹

 The use of biotech crops that resist pests and diseases, tolerate harsh growing conditions and reduce spoilage has also prevented the loss of billions of pounds of important crops.

- In the U.S., enhanced crops have helped farmers prevent the loss of approximately 8 billion pounds of crops in 2005, according to experts.¹²
- Diseases and pests reduce global production of food by more than 35%—a cost estimated at more than \$200 billion a year.¹³ Scientists are continuing work to develop a new generation of biotech crops to address these challenges, to do more to increase the yield of commodity crops and to help plants use water and nitrogen more efficiently.

 Biotechnology has also contributed to improvements in crop productivity—helping plants become more efficient—and has the potential to increase productivity by another 25% worldwide.¹⁴ This can be achieved on existing farmland, to meet local needs in both developed and developing countries, where predictable and stable food production is particularly important.¹⁵



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In a study released in 2005, the National Center for Food and Agricultural Policy quantified biotechnology's benefits for agriculture in the U.S. Among its conclusions, it found that biotech crops improved for herbicide and insect tolerance, for instance, helped farmers reduce their annual production costs by \$1.4 billion.

🌱 Crops improved by biotechnology are embraced by farmers around the world. Over 12 million farmers in 23 countries—more than 90% of whom are resource-poor farmers in the developing world—are already planting biotech crops.¹⁶

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Fighting Poverty Through Technology in a Seed

🌱 Agricultural biotechnology holds enormous promise for helping poor people around the world. Today, many developing-world farmers choose biotech crops to boost productivity and increase efficiency—as one way of helping reduce poverty.

- The benefits of biotechnology are passed on through a seed or plant cutting, so that farmers anywhere around the world can share in the technology. That is why biotechnology is particularly attractive to scientists and rural development experts in poor countries where most people farm for a living.
- The next generation of biotech crops is being developed to do even more to increase the yield of commodity crops, and to help plants use water and nitrogen more efficiently.
- In addition to yield and productivity improvements, scientists are investigating how to use biotechnology to improve the nutritional profile of crops eaten by the poor.

1 United States Census Bureau, International Database.
(<http://www.census.gov/ipc/www/idb/worldpopinfo.html>)

2 United States Census Bureau, Historical National Population Estimates.
(<http://www.census.gov/popest/archives/1990s/popclockest.txt>)

3 United States Census Bureau, Annual Population Change Estimate
(<http://www.census.gov/popest/states/tables/NST-EST2007-02.xls>) and the Annual Population Estimate for New York.



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- 4 United Nations, Human Development Report 2006, p. 174. (<http://www.census.gov/popest/states/tables/NST-EST2007-01.xls>)
- 5 United Nations Population Fund (UNFPA), "State of World Population 2001 Report," Chapter 1 Overview, Nov. 7, 2001. (<http://www.unfpa.org/swp/2001/english/ch01.html>)
- 6 This is estimated as of 1999 by the United Nations Environmental Program: Global Environment Outlook, 2000 – UN Environment Program (<http://www.unep.org/geo2000>)
- 7 Sankula, Sujatha. Executive Summary, "Quantification of the Impacts on US Agriculture of Biotechnology-Derived Crops Planted in 2005," National Center for Food and Agricultural Policy, Nov. 2006, p. 8. (<http://www.ncfap.org/whatwedo/pdf/2005biotechExecSummary.pdf>)
- 8 2007 ISAAA Report, p. 10
- 9 According to a nationwide study by AC Nielson, referenced at Biotech Cotton Produces Bumper Crop in India. (<http://www.whybiotech.com/index.asp?id=4515>)
- 10 James, Clive. "Global Review of Commercialized Transgenic Crops: 2002 Feature: Bt Maize," International Service for the Acquisition of Agri-biotech Applications (ISAAA), Nov. 2003, p. 89. (<http://www.isaaa.org/sesources/publications/briefs/29/default.html>)
- 11 ISAAA. See article and citation above.
- 12 Sankula, Sujatha. Executive Summary, "Quantification of the Impacts on US Agriculture of Biotechnology-Derived Crops Planted in 2005," National Center for Food and Agricultural Policy, Nov. 2006, p. 9. (<http://www.ncfap.org/whatwedo/pdf/2005biotechExecSummary.pdf>)
- 13 Krattiger, Anatole, "Food Biotechnology: Promising Havoc or Hope for the Poor?" Proteus, 2000. (http://www.agbioworld.org/biotech-info/topics/dev-world/havoc_hope.html)
- 14 Prakash, C.S., (October 4, 2001). In a media presentation sponsored by the American Medical Association (AMA), cited Consultative Group on International Agricultural Research (CGIAR) as source. See <www.ama-assn.org> media briefings.
- 15 Biotech crops have increased yields on existing farmland worldwide, See ISAAA Brief 37-2007: Executive Summary. (<http://www.isaaa.org/resources/publications/briefs/37/executivesummary/default.html>)
- 16 ISAAA Brief 37-2007: Executive Summary. (<http://www.isaaa.org/resources/publications/briefs/37/executivesummary/default.html>)
- 17 Sankula, Sujatha. Executive Summary, "Quantification of the Impacts on US Agriculture of Biotechnology-Derived Crops Planted in 2005," National Center for Food and Agricultural Policy, Nov. 2006, p. 9. (<http://www.ncfap.org/whatwedo/pdf/2005biotechExecSummary.pdf>)

ABOUT THE COUNCIL FOR BIOTECHNOLOGY INFORMATION

The Council for Biotechnology Information communicates science-based information about the benefits and safety of agricultural and food biotechnology to sustainable development. Sustainable development seeks to balance and integrate immediate and long-term community needs. It helps enhance our quality of life today, as well as to protect, preserve, and fulfill our needs in the future. Sustainable agriculture is a key component of sustainable development, particularly because it allows for economically and environmentally sustainable agricultural practices. In the United States agricultural biotechnology is contributing today to sustainable agricultural practices, and it has the potential to make even greater contributions in the future through production of biofuels to help meet energy needs; development of drought-tolerant plants to better preserve and manage water resources; and increased crop production to feed our nation and the world's growing population. CBI members are the leading agricultural biotechnology companies.

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