



# Biotechnology Facts

Office of the United States Trade Representative  
February 2006

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## Agricultural Biotechnology: Food Security and Poverty Reduction

- "Biotechnology provides powerful tools for the sustainable development of agriculture, fisheries and forestry and can be of significant help in meeting food needs of a growing and increasingly urbanized population..." UN Food and Agriculture Organization. <http://www.fao.org/biotech/stat.asp>
- "The development of GM organisms (GMOs) offer the potential of increased agricultural productivity or improved nutritional values that can contribute directly to enhancing human health and development. From a health perspective, there may also be indirect benefits such as reduction in agricultural chemical usage, enhanced farm income, crop sustainability and food security, particularly in developing countries." (*World Health Organization, "Modern food biotechnology, human health and development: an evidence-based study", June 2005*)  
[http://www.who.int/foodsafety/biotech/who\\_study/en/](http://www.who.int/foodsafety/biotech/who_study/en/)
- "[M]olecular biology and other tools of modern biotechnology add elegance and precision to the pursuit of solutions to thwart poverty, malnutrition and food insecurity in too many countries around the world. In agriculture these enemies are manifest as pests, diseases, drought and other biotic and abiotic stresses that limit the productivity of plants and animals." (*Consultative Group on International Agricultural Research (CGIAR), Agricultural Biotechnology and the Poor Report, Section One, "Agricultural Biotechnology and the Poor: Promethean Science," by G.J. Persley (2000)*)  
<http://www.worldbank.org/html/cgiar/publications/prometh/pscont.html>
- According to the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), of the approximately 8.5 million farmers who grew biotech crops in 2005, some 90% were resource-poor farmers in developing countries. These include some 6.4 million farmers in the cotton growing areas of China, an estimated 1 million small farmers in India, subsistence farmers in the Makhathini flats in KwaZulu Natal province in South Africa, more than 50,000 in the Philippines and in seven other developing countries where biotech crops were planted in 2005.  
<http://www.isaaa.org/>
- More than one-third (38%) of global biotech crop area of about 222 million acres in 2005 was in developing countries. <http://www.isaaa.org/>
- The rate of growth in biotech crop area between 2004 and 2005 was over four times higher in developing countries (23% growth rate) than in industrial countries (5% growth rate). <http://www.isaaa.org/>

- “Bt cotton has had a significant impact on yields and on the economic performance of cotton growers in Maharashtra (India). Yields of Bt cotton are significantly higher than those on non-Bt varieties, and the use of insecticide is less—just as important given insecticides toxicity and potential for environmental damage.” (R.M. Bennett, Y. Ismael, U. Kambhampati, and S. Morse, *AgBioForum, The Journal of Agrobiotechnology Management & Economics*, Volume 7, Number 3, Article 1) <http://www.agbioforum.org/v7n3/v7n3a01-morse.htm>
- “The expansion of this cost-saving technology (Bt cotton) is increasing the supply of cotton in China, but prices are still sufficiently high for adopters of Bt cotton to make substantial gains in net income.” (Carl E. Pray, Jikun Huang, et.al., “Five years of Bt cotton in China – the benefits continue”, *The Plant Journal*, 2002) <http://www.blackwellpublishing.com/plantgm/Pray.pdf>
- ISAAA’s “Global Review of Commercialized Transgenic Crops: 2002 Feature: Bt Maize” study said Bt corn yields in the Philippines — the first country in Asia to approve the planting of a biotech food crop — were between 41 percent and 60 percent higher than yields for conventional varieties. In addition, also according to ISAAA, although biotech seed corn costs about 80 percent more than conventional hybrid seed, the net income of farmers who planted Bt corn increased about 34 percent, on average. [http://www.isaaa.org/kc/CBTNews/press\\_release/briefs32/ESummary/ES\\_Briefs32\\_country.htm](http://www.isaaa.org/kc/CBTNews/press_release/briefs32/ESummary/ES_Briefs32_country.htm)
- A study conducted on the impact of Bt cotton in the Makhathini region of KwaZulu Natal, South Africa, by Yousouf Ismael, Richard Bennet and Stephen Morse of the University of Reading, indicated that although seeds costs for Bt cotton were double those of Non-bt, pesticide costs were lower. On balance, the gross margins of Bt growers were higher than those of non-Bt growers. <http://agbioforum.org/v5n1/v5n1a01-morse.htm>
- “On a much wider scale, there are about 2.5 million hectares planted to cotton in Africa, most on small plots of less than 10 ha. ...If there was widespread use of Bt varieties across the continent, it could generate additional incomes of about six billion rand, or US\$ 600 million, for some of the world’s poorest farmers.” (Colin Thirtle, Lindie Beyers, et.al. “Can GM-technologies Help the Poor? The Impact of Bt Cotton in Makhathini Flats, KwaZulu-Natal”, *World Development* Vol. 31, No. 4, 2003) [http://www.grain.org/research\\_files/Adoption%20of%20Bt%20Cotton%5B1%5D.pdf](http://www.grain.org/research_files/Adoption%20of%20Bt%20Cotton%5B1%5D.pdf)
- According to the study, “The Global Diffusion of Plant Biotechnology: International Adoption and Research in 2004,” by Dr. Ford Runge of the University of Minnesota, the global commercial value of biotech crops grown in the 2003–2004 crop year is estimated at US\$44 billion. However, as more developing countries grant approval to grow these and other [biotech crops in development](#), the global value of biotech

crops is expected to increase to \$210 billion. According to the report, adoption of these crops in developing countries could raise the gross domestic product in developing countries by 2 percent. <http://www.thecampaign.org/globalbiotech04.pdf>

- "...{E}ffective transfer of existing technologies to poor rural communities and the development of new and safe biotechnologies can greatly enhance the prospects for sustainably improving agricultural productivity today and in the future." FAO Director-General Jacques Diouf.  
[http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/006/y5160e/y5160e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/006/y5160e/y5160e00.htm)