



Biotechnology Facts

Office of the United States Trade Representative

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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) offers 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/
- “[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 I. Serageldin and 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 10.3 million farmers who grew biotech crops in 2006, some 90 percent were resource-poor farmers in developing countries. These include some 6.8 million farmers in the cotton growing areas of China; an estimated 2.3 million small farmers in India; subsistence farmers in the Makhathini flats in KwaZulu Natal province in South Africa; more than 100,000 in the Philippines; and farmers in seven other developing countries. <http://www.isaaa.org/>
- More than one third (38 percent) of the global biotech crop area of about 222 million acres in 2005 was in developing countries. In 2006 developing countries increased their share of global biotech crop area to 41 percent. <http://www.isaaa.org/>

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- The rate of growth in biotech crop area between 2005 and 2006 in developing countries (21 percent) was more than twice as high as the growth rate in industrial countries (9 percent). <http://www.isaaa.org/>
- “India had the largest year-on-year proportional increase, with almost a three-fold or 192 percent increase from 1.3 million hectares in 2005 to 3.8 million hectares in 2006, followed by South Africa at 180 percent from 0.5 million hectares in 2005 to 1.4 million hectares in 2006, and the Philippines with over a 100 percent increase from approximately 0.1 million hectares in 2005 to 0.2 million hectares in 2006.” The “initial modest contribution of biotech crops to the Millennium Development Goal of reducing poverty and hunger by 50 percent by 2015 is an important development, which has enormous potential in the second decade of commercialization from 2006 to 2015.” <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 of non-Bt varieties, and the use of insecticide is greatly reduced -- just as important given insecticides toxicity and potential for environmental damage.” (R.M. Bennett, Y. Ismael, U. Kambhampati, and S. Morse, 2004. *AgBioForum* 7 (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., 2002. “Five years of Bt cotton in China – the benefits continue”, *The Plant Journal* 31 (4)) <http://www.blackwellpublishing.com/plantgm/Pray.pdf>
- ISAAA’s study, "Global Review of Commercialized Transgenic Crops: 2002 Feature: Bt Maize" concluded that 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
- 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

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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 T., L. Beyers, et.al., 2003. “Can GM-Technologies Help the Poor? The Impact of Bt Cotton in Makhathini Flats, KwaZulu-Natal”, *World Development* 31 (4) 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 was an estimated \$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. Adoption of these crops in developing countries could raise the gross domestic product in developing countries by 2 percent, according to the report. <http://www.thecampaign.org/globalbiotech04.pdf>
- "...effective 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