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Biotech Crops Experience Remarkable Dozen Years of Double-Digit Growth
Socio-economic benefits becoming evident among resource-poor farmers

MANILA, PHILIPPINES (Feb. 13, 2008) – After a dozen years of commercialization, biotech crops are still gaining ground with another year of double-digit growth and new countries joining the list of supporters, according to a report released today by the International Service for the Acquisition of Agri-biotech Applications (ISAAA). In 2007, biotech crop area **grew 12 percent or 12.3 million hectares to reach 114.3 million hectares**, the second highest area increase in the past five years.

In addition to planting more biotech hectares, farmers are quickly adopting varieties with more than one biotech trait. These “trait hectares” grew at a swift 22 percent, or 26 million hectares, to reach 143.7 million hectares – more than double the area increase of 12.3 million hectares. New crops were also added to the list as China reported 250,000 biotech poplar trees planted. The insect-resistant trees can contribute to reforestation efforts.

Further, 2 million more farmers planted biotech crops last year to total **12 million farmers** globally enjoying the advantages from the improved technology. Notably, 9 out of 10, or 11 million of the benefiting farmers, were resource-poor farmers, exceeding the 10-million milestone for the first time. In fact, the number of developing countries (12) planting biotech crops surpassed the number of industrialized countries (11), and the growth rate in the developing world was three times that of industrialized nations (21 percent compared to 6 percent.)

“With increasing food prices globally, the benefits of biotech crops have never been more important,” said Clive James, chairman and founder of ISAAA and the report’s author. “Already those farmers who began adopting biotech crops a few years ago are beginning to see socio-economic advantages compared to their peers who haven’t adopted the crops. If we are to achieve the Millennium Development Goals (MDGs) of cutting hunger and poverty in half by 2015, biotech crops must play an even bigger role in the next decade.”

According to the report, biotech crops have delivered unprecedented benefits that contribute toward the MDGs, particularly in countries like China, India and South Africa. The potential in the second decade of biotech crop commercialization (2006-2015) is enormous.

Studies in India and China show Bt cotton has increased yields by up to 50 percent and 10 percent, respectively, and reduced insecticide use in both countries up to 50 percent or more.

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In India, growers increased income up to \$250 or more per hectare, increasing farmer income nationally from \$840 million to \$1.7 billion last year. Chinese farmers saw similar gains with incomes growing an average of \$220 per hectare, or more than \$800 million nationally. Importantly, these studies showed strong farmer confidence in the crops with 9 of 10 Indian farmers replanting biotech cotton year on year, and 100 percent of Chinese farmers choosing to continue utilizing the technology.

While these types of economic benefits are well substantiated, the **socio-economic benefits associated with biotech crops are starting to emerge**. A study of 9,300 Bt cotton and non-Bt cotton-growing households in India indicated that women and children in Bt cotton households have slightly more access to social benefits than non-Bt cotton growers. These include slight increases in pre-natal visits, assistance with at-home births, higher school enrollment for children and a higher proportion of children vaccinated.

Rosalie Ellasus, a widowed mother of 3 children, found similar benefits, choosing farming as a way to support her family. "With the extra income generated from biotech maize, investing in farming made sense and allowed me to earn more than the medical technology field I was trained in," she said. "The biotech maize gave me peace of mind and meant less time monitoring for pests. With stack corn, I also incur savings on cultivation and weeding costs. With the added income, I have been able to send all my children to college."

"It's these types of benefits that will make crop biotechnology a vital tool in achieving the U.N. Millennium Development Goals of cutting hunger and poverty in half and ensuring a more sustainable agriculture in the future," James said. "To reach these goals, a continued broadening and deepening of biotech crop use is crucial to meeting food, feed, fiber and fuel needs in the future."

In 2007, the United States, Argentina, Brazil, Canada, India and China continued to be the principal adopters of biotech crops globally. While the United States continues to be the largest user of the technology, its biotech crop area represents a declining share of the global area due to a broadening adoption. [Editor's note: see ISAAA Country Fact Sheet for additional detail on specific countries.]

"With a dozen years of accumulated knowledge and significant economic, environmental and socio-economic benefits, biotech crops are poised for even greater growth in coming years, particularly in developing countries that have the greatest need for this technology," James said.

According to the report, Burkina Faso, Egypt and possibly Vietnam are the next mostly likely countries to approve biotech crops. Australia is field-testing drought-tolerant wheat and

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two states recently lifted a four-year ban on biotech canola. Finally, countries like India recognize the importance of using biotechnology to make the country self-sufficient in food grains, including rice, wheat and oil seed production with the first biotech food crop, biotech eggplant, expecting approval in the near-term.

“I predict the number of **biotech countries, crops, traits, area and farmers will all grow substantially in the second decade** of adoption,” James said. “More developing countries are likely to approve the technology as it’s now possible to design regulatory systems that are rigorous without being onerous given their limited resources. The current delay in timely approvals of biotech crops like golden rice with benefits for millions is a moral dilemma where the demands of regulatory systems have often become the end and not the means.”

The report is entirely funded by the Rockefeller Foundation, a U.S.-based philanthropic organization associated with the Green Revolution; Ibercaja, one of the largest Spanish banks headquartered in the maize growing region of Spain; and the Bussolera-Branca Foundation from Italy, which supports the open-sharing of knowledge on biotech crops to aid decision-making by global society. For more information or the executive summary, log on to www.isaaa.org.

The International Service for the Acquisition of Agri-biotech Applications (ISAAA) is a not-for-profit organization with an international network of centers designed to contribute to the alleviation of hunger and poverty by sharing knowledge and crop biotechnology applications. Clive James, chairman and founder of ISAAA, has lived and/or worked for the past 25 years in the developing countries of Asia, Latin America and Africa, devoting his efforts to agricultural research and development issues with a focus on crop biotechnology and global food security.

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ISAAA Country Fact Sheet

- **India** experienced the **highest proportional increase** in 2007 for the third consecutive year with a 63 percent gain to total 6.2 million hectares of Bt cotton, grown by 3.8 million resource-poor farmers. These gains have taken India from having one of the lowest cotton yields in the world to being a net cotton exporter, potentially 5 million bales in 2007/2008. In fact, subsistence farmer Mrs. Akkaplai who grows 1.3 hectares of cotton in India said that before insect-resistant cotton, *“We were badly off and unable to afford anything properly. Finally cotton cultivation has actually turned profitable.”* These experiences led India’s Minister of Finance to recently state: *“It is important to apply biotechnology in agriculture. What has been done with cotton must be done with food grains.”*
- **China** increased Bt cotton production by 0.3 million hectares to total 3.8 million hectares, 69 percent of the country’s cotton area. A total of 7.1 million resource-poor farmers planted the biotech crop. Further, China has 3,500 hectares of virus-resistant papaya and 250,000 Bt poplar trees which can contribute to reforestation.
- **Brazil** experienced **the greatest absolute growth** at 3.5 million hectares to total 15 million hectares of herbicide-tolerant soybeans and Bt cotton. These numbers are predicted to climb with the expected final approval and planting of biotech maize in 2008/2009. Brazil is fast **emerging as a global leader in biotech crops** with significant potential of applying the technology to sugarcane for ethanol production. Brazil has the largest area sugarcane globally at 6.2 million hectares.
- **South Africa**, the only country in Africa planting biotech crops, increased plantings 30 percent in 2007 to total 1.8 million hectares. Notably, nearly all growth came from white maize for food. Chief Mdutshane of Ixopos calls Bt white maize “iyasihluthisa” meaning “it fills our stomachs.” *“For the first time the Ixopos have produced enough to feed themselves.”*
- **Europe** surpassed 100,000 hectares of biotech crops for the first time in 2007 with 77 percent growth. In EU, **8 of the 27 countries planted biotech crops** in 2007, up from 6 in 2006. Spain led the way with 70,000 hectares of Bt maize, up 40 percent over 2006 to reach 21 percent of the country’s total maize area. The collective Bt maize area in the 7 other countries – France, Czech Republic, Portugal, Germany, Slovakia, Romania and Poland – increased four-fold from 8,700 hectares in 2006 to 35,700 hectares in 2007, albeit on modest areas.
- **Poland planted biotech crops for the first time and Chile joined the list** to total 23 countries enjoying the benefits of these crops in 2007.

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Biotech Crops' Contribution to U.N. Millennium Development Goal and a More Sustainable Agriculture

As the U.N. Millennium Development Goal nears, it is useful to look at biotechnology's contribution toward the goal of reducing poverty and hunger by 50 percent by 2015, and to a more sustainable agriculture in the future.

- **Increasing global crop productivity to improve food, feed and fiber security and sustainability:** In the first 11 years of biotech crops, yield gains in the key commodities were valued at \$34 billion. Production increases will continue with the introduction of the very important drought-tolerant crops in the next decade, as well as more nutritious crops like soybeans enhanced with omega-3 oils and rice with enriched vitamin A content.
- **Contributing to the alleviation of poverty and hunger:** 50 percent of the world's poorest are small farmers and another 20 percent of the rural landless are dependent on agriculture. Already biotech cotton and biotech white maize are contributing modest socio-economic benefits to these groups. The expected near-term approval of Bt eggplant in India and potential for biotech rice in China would substantially further these efforts.
- **Reducing the environmental footprint of agriculture:** Already biotech crops have cut pesticide use, decreased carbon dioxide emissions and saved fossil fuel use due to less tillage and spraying. In 2006, biotech crops saved 14.8 billion kg of carbon dioxide, equivalent to removing 6.5 million cars from the road. In the next decade, crops with increased drought tolerance will help limit water use and greater nitrogen efficiency will help improve use of this important nutrient.
- **Mitigating climate change and reducing greenhouse gases:** Biotech crops already contribute to reduced carbon dioxide emissions. Biotech crops that can be developed faster to meet more rapid changes in climate are in development. Further, use of biotech poplar trees, already planted in China, and faster growing trees that are in development can make a substantial contribution in the world's need for quick re-forestation to help mitigate the effects of global warming.
- **Contributing to the cost-effective production of biofuels:** Biotech crops help optimize the crop and biomass production per hectare to help supply the world's demands for more affordable food, feed fiber and biofuel products.