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Biotech Crops Surge Over 1 Billion Hectares

Developing nations drive growth at adoption rates exceeding industrialized countries

SAO PAULO, BRAZIL **(February 22, 2011)** – In just 15 years after commercialization, accumulated biotech crops exceeded 1 billion hectares in 2010, a milestone that signifies biotech crops are here to stay, according to Clive James author of the annual report released today by ISAAA (International Service for the Acquisition of Agri-biotech Applications).

The 1 billionth hectare was planted in 2010 by one of the 15.4 million farmers in 29 countries who now benefit from the technology. For comparison, 1 billion hectares is roughly equivalent to the vast land area of China, or of the United States. With an unprecedented 87-fold increase between 1996 and 2010, biotech crops are the fastest-adopted crop technology in the history of modern agriculture, according to James, chairman and founder of ISAAA.

"Growth remains strong, with biotech hectarage increasing 14 million hectares -- or 10 percent – between 2009 and 2010," said James. "That's the second highest annual hectare growth ever – bringing 2010 global plantings to 148 million hectares."

For the first time, in 2010, the ten largest biotech crop growing countries all had more than 1 million hectares in production, providing a broad and stable base for future growth. In hectarage rank order, they include: USA (66.8 million), Brazil (25.4 million), Argentina (22.9 million), India (9.4 million), Canada (8.8 million), China (3.5 million), Paraguay (2.6 million), Pakistan (2.4 million), South Africa (2.2 million) and Uruguay (1.1 million).

For the second consecutive year, Brazil had the world's largest year-over-year increase in absolute biotech crop plantings, adding 4 million hectares in 2010 -- a 19 percent increase -- to grow a total of 25.4 million hectares. Only the United States leads Brazil in total cropland devoted to biotech crops. Australia, which recovered from a multi-year drought, saw the largest proportional year-on-year increase in biotech crop plantings at 184 percent. Burkina Faso followed at 126 percent growth with 80,000 farmers planting 260,000 hectares, a 65 percent adoption rate.

Brazil, after expediting approvals of biotech crops (a total of 27, and 8 in 2010 alone) and securing export trade agreements, now plants 17 percent of the world's biotech crops, according to Dr. Anderson Galvão Gomes, director of Brazilian-based Celeres and contributor to the ISAAA report. Productivity increases attributed to biotech crops helped fuel Brazil's ability to double its annual grain production since 1990 while increasing cropland by only 27 percent. The benefits from biotech crops are spurring strong political will and substantial new R&D investments in biotech crops, with speed and effectiveness increasing access to technology, Gomes noted. With an ability to bring up to 100 million more hectares of cropland, with water, into production, Brazil will continue to be a driving force in the global adoption of biotech crops and is investing in infrastructure to support that growth.

"Developing countries grew 48 percent of global biotech crops in 2010 and will exceed industrialized nations in their plantings of biotech crops by 2015," said James. "Clearly, the countries of Latin America and Asia will drive the most dramatic increases in global hectares planted to biotech crops during the remainder of the technology's second decade of commercialization."

The five principal developing countries growing biotech crops – China, India, Brazil, Argentina and South Africa – planted 63 million hectares of biotech crops in 2010, equivalent to 43 percent of the global total. All told, 19 of the 29 countries that have adopted biotech crops are developing nations, which grew at a rate of 17 percent or 10.2 million hectares over 2009 compared to only 5 percent growth or 3.8 million hectares in industrialized countries.

More than 90 percent of biotech crop growers are small-scale farmers

Of the 15.4 million farmers using the technology in 2010, 14.4 million were small-scale, resource-poor farmers in developing countries; these farmers are some of the poorest people in the world and biotech crops are contributing to the alleviation of their poverty, according to James. China and India now have the most small-scale farmers using biotech crops, with 6.5 million Chinese farmers and 6.3 million Indian farmers planting biotech crop seed. Remarkably, over the last 15 years, farmers worldwide have made 100 million independent decisions to plant biotech crops.

More than 1 billion people throughout Asia, who are members of the 250 million small-scale rice-producing households cultivating about one-half hectare, are potential beneficiaries from the expected commercialization of insect-resistant *Bt* rice expected to be introduced before 2015, James noted.

"This is important progress," said James. "Up to 6,000 deaths a day can be prevented with Golden Rice for Vitamin A deficient populations, which is expected to be available for planting in the Philippines by 2013 followed by Bangladesh, Indonesia and Vietnam."

Countries new to biotech crop production, additional crops on horizon

In 2010, three nations grew biotech crops commercially for the first time, and one nation resumed planting biotech crops. Approximately 600,000 farmers in Pakistan and 375,000 farmers in Myanmar, planted insect-resistant *Bt* cotton, and Sweden (the first Scandinavian country to commercialize biotech crops) planted a new biotech high-quality starch potato approved for industrial and feed use. Germany also planted the same biotech potatoes in 2010, resuming its place among the eight EU nations now growing either biotech maize or potatoes.

James said he expects an additional 12 countries to adopt biotech crops by 2015 to bring the list of adopting nations to 40 (the number predicted by ISAAA in 2005), the number of farmers to double to 20 million, and global hectarage to double to 200 million hectares. Up to three or four additional countries are expected to grow biotech crops from each of the three regions of Asia, West Africa, East/Southern Africa and fewer from Latin/Central America, and Western and Eastern Europe. Mexico, the center of biodiversity for maize, successfully conducted its first field trials of *Bt* and herbicide tolerant maize in 2010. Mexico has already successfully grown biotech cotton and soybean for many years.

James said there is considerable potential for increasing the biotech adoption of the four current large hectarage biotech crops – maize, soybean, cotton and canola – which represented almost 150 million hectares in 2010 from a global potential of double that hectarage at over 300 million hectares. In the next five years, the timing of commercialized biotech rice, and drought tolerance as a trait in maize and several other crops are seminal catalysts for the future adoption of biotech crops globally. Drought tolerant maize is expected in the U.S. as early as 2012, and importantly, in Africa by 2017. The decision, four years ago, to delay biotech herbicide tolerant wheat is also being revisited and many countries are fast-tracking the development of biotech wheat with a range of traits including drought tolerance, disease resistance and grain quality – the first of which are expected to be ready for commercialization as early as 2017. James expects several medium hectarage crops to be approved for commercialization by 2015, including: biotech potatoes resistant to the most important disease of potatoes in the world, "late blight," the cause of the Irish famine in 1845, sugarcane with improved agronomic and quality traits, disease-

resistant bananas, *Bt* eggplant, tomato, broccoli, and cabbage, as well as some pro-poor crops, such as biotech cassava, sweet potato, pulses and groundnut. The 29 countries which planted biotech crops in 2010 already represent 59 percent of the world population, and James is cautiously optimistic about the contribution that biotech can make to the 2015 Millennium Development Goals of food security and poverty alleviation.

"Biotech crops have played a perhaps underappreciated role in progress toward attainment of the 2015 Millennium Development Goals," said James. "Their impact by 2015 will be more universally recognized."

Furthermore, biotech crops have contributed to sustainability and are helping mitigate climate change, said James: "Biotech crops have helped reduce carbon emissions and save land, while helping alleviate poverty for some of the poorest people in the world."

To provide more of the world's small and resource-poor farmers access to biotech crops, James says there is an urgent need for appropriate regulatory systems that are responsible and rigorous – but not onerous – for small and poor developing countries.

For more information or the executive summary, log on to www.isaaa.org.

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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 30 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.