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Biotech crops helps countries boost income

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Singapore:Ã?Â For the first time since the introduction of biotech/GM crops almost two decades ago, developing countries have grown more hectares of biotech crops than industrialized countries, contributing to food security and further alleviating poverty in some of the world's most vulnerable regions.

Developing nations planted 52 percent of the global biotech crops in 2012, up from 50 percent a year earlier and above the 48 percent industrial countries grew last year, according to a report released by the International Service for the Acquisition of Agri-Biotech Applications (ISAAA).

Last year also marked an unprecedented 100-fold increase in biotech crop hectarage to 170 million hectares from 1.7 million in 1996, when biotech crops were first commercialized. "This makes biotech crops the fastest adopted crop technology in recent history," said Mr Clive James, veteran author of the annual report and chair and founder of ISAAA.

Adoption of biotech crops in developing countries has built up steadily over the years, finally turning the corner and surpassing industrial countries in 2012, a milestone once thought impossible by some, James said. This comes about as the world grows more biotech crops than ever before.

"This growth is contrary to the prediction of critics, who prior to the commercialization of the technology in 1996 prematurely declared that biotech crops were only for industrial countries, and would never be accepted and adopted by developing countries," James said.

The report underscores rising awareness in developing countries about the benefits of planting genetically modified crops, which not only have increased yields, but also bring savings in fuel, time and machinery, reduction in pesticide use, higher quality of product and more growing cycles.

From 1996 to 2011, biotech crops contributed to food security, sustainability, and climate change by: increasing crop production valued at $98.2 billion; providing a better environment by saving 473 million kg a.i. of pesticides; in 2011 alone reducing CO2 emissions by 23 billion kg, equivalent to taking 10.2 million cars off the road; conserving biodiversity by saving 108.7 million hectares of land; and helped alleviate poverty by helping >15.0 million small farmers and their families totaling >50 million people who are some of the poorest people in the world. Biotech crops are essential but are not a panacea and adherence to good farming practices such as rotations and resistance management, are a must for biotech crops as they are for conventional crops.

Unprecedented Growth

Globally, farmers grew a record 170.3 million hectares of biotech crops in 2012, up 6 percent, or 10.3 million hectares more than in 2011, boosting farmers' income worldwide due to enhanced productivity and efficiency gains.

"There is one principal and overwhelming reason that underpins the trust and confidence of farmers in biotechnology: biotech crops deliver substantial, and sustainable, socio-economic and environmental benefits," James said.

Resource-Poor Farmers Benefit the Most

ISAAA's report also confirmed that the rate and scale of biotech crop adoption in developing countries dwarfs that of industrialized nations. The growth rate for biotech crops was at least three times as fast, and five times as large, in developing countries, at 11 percent or 8.7 million hectares, versus 3 percent or 1.6 million hectares in industrial countries.

A record 17.3 million farmers grew biotech crops worldwide in 2012, up 0.6 million from a year earlier. Over 90 percent of these farmers, or more than 15 million, were small resource-poor farmers in developing countries. "Global food insecurity, exacerbated by high and unaffordable food prices, is a formidable challenge to which biotech crops can contribute," James said.

Sudan and Cuba Make History

Sudan and Cuba planted biotech crops for the first time last year. By growing biotech cotton, Sudan became the fourth country in Africa, after South Africa, Burkina Faso and Egypt, to commercialize a biotech crop.

Meanwhile, Cuban farmers planted 3,000 hectares of hybrid biotech maize as part of an initiative to bolster ecological sustainability and remain pesticide free.

Of the 28 countries that planted biotech crops, 20 were developing and eight were industrial countries, compared to 19 developing and 10 industrial countries in 2011. Approximately 60 percent of the world's population, or about 4 billion people, live in the 28 countries planting biotech crops.

Brazil Biotech Crops Grow 21 percent

China, India, Brazil, Argentina and South Africa, which together represent approximately 40 percent of the global population, grew 78.2 million hectares or 46 percent of global biotech crops in 2012.

For the fourth consecutive year, Brazil was the engine of growth globally in 2012, fortifying itself as a global leader in biotech crops. Brazil ranks second only to the U.S. in worldwide biotech crop hectarage, growing at a year-to-year record 6.3 million hectares, or a substantial 21 percent, to reach 36.6 million hectares in 2012 compared to 30.3 million in 2011.

A fast-track science-based approval system allows Brazil to adopt new biotech crops in a timely manner. For instance, the South American country was the first to approve the stacked soybean with insect resistance and herbicide tolerance for commercialization in 2013, James said.

Indian Cotton Farmers Reap Record Income

India cultivated a record 10.8 million hectares of Bt cotton with an adoption rate of 93 percent, while 7.2 million small resource-poor farmers in China grew 4.0 million hectares of biotech cotton with an adoption rate of 80 percent.

For the 11th successive year, Bt cotton has successfully suppressed the infestations of bollworm in India- the last devastating infestation occurred in 1997, prior to the introduction of Bt cotton in 2002. The use of insecticides on cotton bollworm expressed as a percent of total cotton insecticide, reduced noticeably from 46% in 2001 to 3% in 2011 (to an almost negligible spraying). As a result, the country produced impressive "mountains" of raw cotton increasing national cotton production from 13.6 million bales in 2002 to 35.3 million bales in 2012 - a substantial 160% increase in a short span of eleven years. Notably, Bt cotton boosted small farmer's income an enhanced country's farm income by US$12.6 billion in the ten year period 2002 to 2011 and US$3.2 billion in 2011.

US Remains the World's Largest Grower

The U.S. continued to be the lead country with 69.5 million hectares, with an average of 90 percent adoption across all crops. The report notes that the devastating 2012 drought hit various crops. The most recent estimates indicate that due to the drought, average yields in 2012 were 21 percent less for maize and 12 percent less for soybeans compared with 2011 yields.

Canada, on the other hand, had a record 8.4 million hectares of canola at a record 97.5 percent adoption.

The EU countries grew a record 129,071 hectares of Bt maize in 2012, but Germany and Sweden could not continue to plant the biotech potato Amflora because it ceased to be marketed; Poland discontinued planting biotech maize because of regulation inconsistencies in the interpretation of the law with the EU maintaining that all necessary approvals were already in place for planting, whereas Poland did not.

Challenges Remain

The lack of appropriate, science-based and cost-time-effective regulatory systems continues to be the major constraint to adoption of biotech crops. Responsible, rigorous but not onerous, regulation is needed for small and poor developing countries, James said.

"Biotech crops are important but are not a panacea," he added. "Adherence to good farming practices, such as rotations and resistance management, are a must for biotech crops as they are for conventional crops."

The near-term looks encouraging with new improved products such as the first biotech drought tolerant maize approved for planting in the USA in 2013 and also the first planting of the stacked soybean in Brazil and neighboring countries in South America in 2013. In the Philippines, Vitamin A enhanced Golden rice could be released in 2013/2014 subject to regulatory approval. Going forward, global growth of biotech crop hectares is likely to be more modest due to the already high rate of adoption in all the principal crops in mature markets in both developing and industrial countries, James noted.