Global Status of Commercialized Biotech/GM Crops: 2013

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TOP 5 FACTS ABOUT BIOTECH/GM CROPS IN 2013

#1: EIGHTEEN YEARS CONTINUED GROWTH: Hectares up five million or three percent on 2012.

- Between 1996 and 2013, biotech crop hectares have increased by more than 100 fold – from 1.7 million hectares in 1996 to over 175 million hectares in 2013 – representing 18 consecutive years of successful commercialization of biotech crops.
- Accumulated hectarage to-date stand at 1.6 billion hectares or >150 percent of the total landmass of US or China. Eighteen million farmers (>16.5 million were small and poor) in 27 countries – 8 industrial countries and 19 developing countries.
- The US continued to lead with 70.1 million hectares, with 90 percent or more adoption across all major crops.
- More than 2,000 American farmers planted 50,000 hectares of the first biotech drought tolerant maize developed by Monsanto, which has also donated the technology for use in Africa through the WEMA project.
- Brazil was ranked second for the fifth consecutive year, and also increased its hectarage more than any other country for the fifth consecutive year – an increase of 3.7 million hectares or 10 percent – launched the first stacked herbicide-tolerant/insect-resistant soybean on 2.2 million hectares.

Outlook: In 2013, each of the top ten countries planted more than 1 million hectares providing a broad foundation for future growth with eight of the 10 being developing countries. Growth in 2013 represents confidence and trust of millions of convinced, risk-adverse farmers globally who have gained from the significant benefits that biotech crops offer. After trying biotech crops, nearly 100 percent of farmers chose to plant biotech year-after-year, thereafter.

#2: INCREASED HECTARAGE IN DEVELOPING COUNTRIES. Developing countries planted more hectares than industrial countries for the second year, and growth continues to expand, opening the gap with industrial countries

- Latin American, Asian and African farmers collectively grew 54 percent or 94 million hectares of global biotech crops (up two percent from 2012) compared to industrial countries at 46 percent or 81 million hectares (down two percent from 2012).
- Growth in 2013 was led again by Brazil, which posted an impressive 3.7 million hectare or 10 percent increase.
- In 2013, growth continued to plateau in industrial countries and in mature markets of developing countries, where adoption rates were sustained at an optimal rate of 90 to 100 percent, leaving little to no room for expansion.

Outlook: Adoption in developing countries will continue to grow. Brazil will continue to lead growth in developing countries during the next year.

#3: DEVELOPING COUNTRIES ARE BREAKING THE IMPASSE. Developing countries are continuing to push forward with biotech research, development and commercialization. Here are some highlights from 2013:

- Bangladesh approved biotech eggplant for planting for the first time in 2013. The addition of Bangladesh serves as an exemplary model for other small and poor countries – it broke the impasse experienced in trying to gain approval to commercialize biotech eggplant in both India and the Philippines.
- Two additional developing countries approved biotech crops in 2013 for commercialization in 2014. Indonesia developed and approved a home-grown biotech drought tolerant sugarcane (the first biotech sugarcane to be approved globally) and Panama approved planting of stacked biotech maize.
- In Africa, where South Africa, Burkina Faso and Sudan are commercializing, seven additional countries are conducting biotech crop field trials (the penultimate step to commercialization): Cameroon, Egypt, Ghana, Kenya, Malawi, Nigeria and Uganda. Egypt did not plant biotech maize in 2013 pending review.
- Some observers believe China might be paving the way to approval of a major biotech crop, most likely to be high-phytase maize, which received biosafety clearance in 2009, when two biotech rice events were also approved.

Outlook: Continued developments and approvals in developing countries, combined with increased adoption by small and poor farmers. Developing countries in general will continue to experience increased adoption rates. An important factor is China, which grows 35 million hectares of maize to feed its 500 million swine and 13 billion poultry, and is becoming increasingly dependent on maize imports.

#4: PUBLIC/PRIVATE PARTNERSHIPS ARE IMPORTANT. Public/private partnerships and global research and development of biotech crops combined with "political will" are necessary for biotech crop adoption and sustainability. Partnerships have been successfully established by several developing countries. Below are a few examples:

- Brazil and BASF have already developed and approved a herbicide tolerant soybean that is ready for commercialization.
- Bangladesh and Mahyco, an Indian company, achieved success with biotech eggplant, which was approved for planting in 2013. Supportive "political will" was essential for its success.
- Other examples include the Water Efficient Maize for Africa (WEMA) project funded by international foundations, and managed and administered by CIMMYT and AATF, respectively, and directed at several countries in Africa, including South Africa, Kenya and Uganda.

Outlook: "Political will" and support is a must, without which no project will be a success. The zenith of success is through developing and approving home-grown biotech crops, such as virus resistant beans developed by EMBRAPA in Brazil using national resources entirely and thereby ensuring sustainability.

#5: BIOTECH GROWTH ENGINE IS ROOTED IN LATIN AMERICA, ASIA AND AFRICA. In 2013, Latin America planted the most at 41 percent or 70 million hectares; Asia planted 11 percent or 20 million hectares; and Africa planted 2 percent or just over 3 million hectares.

- In Latin America, Brazil is the engine of growth, followed by Argentina. Only a few countries in the continent do not plant biotech crops.
- Asia has the most potential with the two most populous countries in the world, China and India, which already benefit from biotech cotton, but it is the rice crop that offers the greatest potential.

Golden Rice presents a momentous and unique opportunity, and both IRRI and PhilRice are assigning high priority to the initiative. "Allow Golden Rice" campaign founded by Patrick Moore was developed to pressure Greenpeace, emphasizing the moral obligation of society to provide for 2 million innocent malnourished children who die each year due to Vitamin A deficiency.

- Indonesia, the fourth most populous country in the world, has already developed and approved biotech sugarcane for food (feed is under consideration) with plans to commercialize in 2014.
- Bangladesh approved biotech eggplant for planting and is also pursuing approval for Golden Rice and biotech potato.
- South Africa has benefitted from biotech crops for more than a decade – both Burkina Faso and Sudan increased their biotech cotton hectarage by an impressive 50 percent and 300 percent, respectively, in 2013. Seven other African countries are conducting biotech field trials, penultimate final step to approval for commercialization

Hectarage in the EU up 15 percent between 2012 and 2013. Five EU countries, same as last year, planted a record 148,013 hectares of biotech maize, up 18,942 hectares or 15 percent from 2012.

- Spain led the EU with a record 136,962 hectares of biotech maize, up 18 percent since 2012.
- Onerous and over-demanding EU reporting procedures are a disincentive for farmers to plant biotech crops in EU countries.

Outlook: China's influence in Asia is paramount and the timing of its commercialization of a principal biotech staple will be pivotal to the broader acceptance of biotech crops in the region. Also, the lack of an appropriate, science-based and cost/time-effective regulatory system continues to be the major constraint to adoption in Africa and also in many other developing countries.

NET IMPACT: Biotech crops benefit food security, sustainability, the environment and climate change. Between 1996 and 2012, biotech crops made positive contributions through: increased crop production valued at $116.9 billion; environmental benefits by 497 million kg (a.i.) of reduced pesticides; reduced CO2 emissions of 26.7 billion kg in 2012 alone, equivalent to removing 11.8 million cars from the road for one year; conserving biodiversity during the period 1996 to 2012 by saving 123 million hectares of land; and alleviation of poverty for more than 16.5 million small farmers and farm families, totaling more than 65 million people. Biotech crops can contribute to a **"sustainable intensification"** strategy favored by many science academies worldwide, which allows productivity to be increased only on the current 1.5 billion hectares of global crop land, thereby saving forests and biodiversity. Biotech crops are essential, but are not a panacea. Adherence to good farming practices such as rotations and resistance management are required for biotech crops, just as they are for conventional crops.

ISAAA is a not-for-profit organization, sponsored by public and private sector organizations. All biotech crop hectare estimates in all ISAAA publications are only counted once, irrespective of how many traits are incorporated in the crops. Detailed information is provided in ISAAA Brief 46 "Global Status of Commercialized Biotech/GM Crops: 2013" by Clive James. founder and Emeritus Chair of ISAAA, who has lived/worked in developing countries for the last 30 years and published extensively on biotech crops and food security. For further information, please visit http://www.isaaa.org or contact ISAAA *SEAsia*Center at +63 49 536 7216, or email to info@isaaa.org.