

Pocket K No. 16

Global Status of Commercialized Biotech/GM Crops in 2007

In 2007, the global area of biotech crops continued to soar for the twelfth consecutive year at a sustained double-digit growth rate of 12%, or 12.3 million hectares (30 million acres), reaching 114.3 million hectares (282.4 million acres). This is the second highest increase in global biotech crop area in the last five years. The total area planted is about 12 million hectares more than the 2006 figure of 102 million hectares (Figure 1). The use of two or three “stacked traits” that confer multiple benefits in a single biotech variety can further increase the figure to 143.7 million hectares or about 25% higher than the estimated 114.3 million hectares.

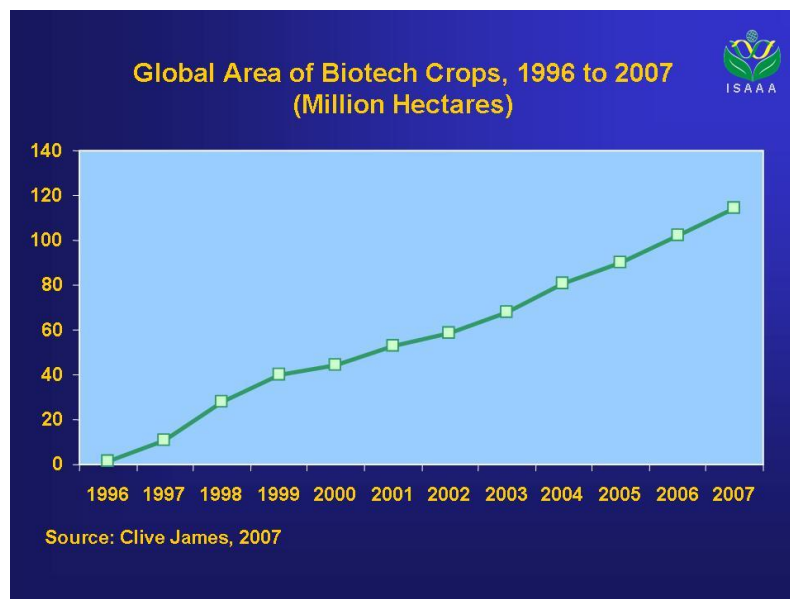


Figure 1. Global Area of Biotech Crops, 1996 to 2007 (Million Hectares)

Two additional countries, Poland planting Bt maize for the first time and Chile growing more than 25,000 hectares of biotech maize, soybean and canola, have been added to the global list of biotech countries, bringing the total to 23. Poland now joins other EU countries growing biotech crops such as Spain, France, Czech Republic, Portugal, Germany, Slovakia, and Romania.

A total of 12 million farmers from 23 countries planted biotech crops in 2007, which was 1.7 million farmers more than in 2006. Of these farmers, 90% or 11 million (up from 10.3 million in 2006) were small and resource-poor farmers from developing countries such as China, India, Philippines and South Africa.

In summary, during the period 1996 to 2007, an accumulated total of approximately 700 million hectares or 1.7 billion acres of biotech crops have been successfully grown as a result of approximately 55 million repeat decisions by farmers to plant these crops. This is equivalent to more than half the total land area of the USA and China, or 25 times the total land area of the United Kingdom. The unprecedented 60-fold increase in the last decade has made it the fastest adopted crop technology in recent history and hence, reflects the growing acceptance of biotech crops by farmers in both industrial and developing countries.

Table 1. Global Area of Biotech Crops, 1996 to 2007

Year	Hectares (Million)	Acres (Million)
1996	1.7	4.3
1997	11.0	27.5
1998	27.8	69.5
1999	39.9	98.6
2000	44.2	109.2
2001	52.6	130.0
2002	58.7	145.0
2003	67.7	167.2
2004	81.0	200.0
2005	90.0	222.0
2006	102.0	250.0
2007	114.3	282.0
TOTAL	690.9	1,707.3

Increase of 12%, 12.3 million hectares (30 million acres) between 2006 and 2007.
Source: Clive James, 2007.

Distribution of Biotech Crops in Industrial and Developing Countries

Figure 2 shows the relative area of biotech crops in industrial and developing countries from 1996-2007. In 2007, more than 40% of the global biotech crop area, equivalent to 49.4 million hectares, was grown in 12 developing countries. While a substantial share (57%) is grown in industrial countries, the proportion of biotech crops grown in the developing world has increased consistently every year, especially in countries like India and the Philippines in Asia, Brazil, Paraguay and Uruguay in Latin America, and South Africa in the African continent. In fact, all the top 5 countries with the highest year on year percentage growth between 2006 and 2007 were developing countries. The percentage growth was more than three times higher (21%) in the developing countries of the South, compared to 6% of the industrial countries in the North.

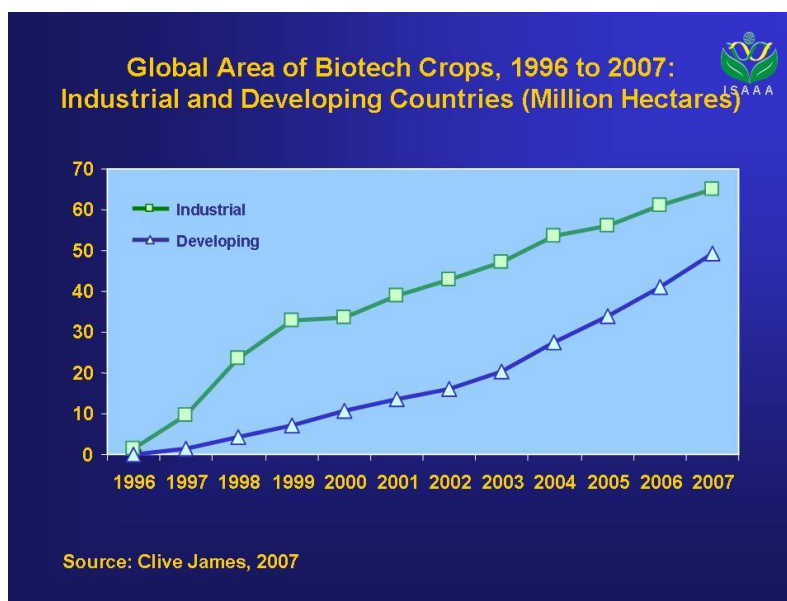


Figure 2. Global Area of Biotech Crops, 1996 to 2007: Industrial and Developing Countries (Million Hectares)

Distribution of Biotech Crops, by Country

Twenty-three countries grew biotech crops in 2007, 12 of which were developing countries. Biotech crops were grown commercially in all six continents of the world. The two new biotech crop countries in 2007 were Chile, producing more than 25,000 hectares of biotech crops for seed export, and Poland, an EU member country growing Bt maize for the first time. Of the 23 countries planting biotech crops in 2007, 13 countries planted 50,000 hectares or more to biotech crops (Table 2). These mega-countries included the USA, Argentina, Brazil, Canada, India, China, Paraguay, South Africa, Uruguay, Philippines, Australia, Spain, and Mexico reflecting a more balanced and broader group of countries adopting biotech crops.

Five countries had the largest increase in the absolute area of biotech crops of 0.5 million hectares or more between 2006 and 2007. These were Brazil, USA, India, Argentina, and Canada. Modest growth in crop biotech area was reported in Paraguay, South Africa and China. Australia was the only country to report a significant negative growth of biotech crops, due to the severe drought that drastically reduced cotton plantings in the region. India had the highest percentage year-on-year growth in 2007, with an increase of 63% in BT cotton area over 2006, followed by the Philippines (50%), Brazil and Paraguay (30%), South Africa (29%) and Uruguay (25%).

Table 2. Global Area of Biotech Crops in 2006 and 2007: by Country (Million Hectares)

Country	2006	2007
USA*	54.6	57.7
Argentina*	18.0	19.1
Brazil*	11.5	15.0
Canada*	6.1	7.0
India*	3.8	6.2
China*	3.5	3.8
Paraguay*	2.0	2.6
South Africa*	1.4	1.8
Uruguay*	0.4	0.5
Philippines*	0.2	0.3
Australia*	0.2	0.1
Spain*	0.1	0.1
Mexico*	0.1	0.1
Colombia	<0.1	<0.1
Chile	--	<0.1
France	<0.1	<0.1
Honduras	<0.1	<0.1
Czech Republic	<0.1	<0.1
Portugal	<0.1	<0.1
Germany	<0.1	<0.1
Slovakia	<0.1	<0.1
Romania	<0.1	<0.1
Poland	--	<0.1
Total	102.0	114.3

* Biotech mega-countries which grew more than 50,000 hectares, or more, of biotech crops in 2007.

Source: Clive James, 2007.

Dominant Biotech Crop in 2007

Herbicide tolerant soybean continued to be the dominant biotech crop in 2007, occupying 58.6 million hectares, 51% of global biotech area (Table 3), representing 64% of the global crop area (Figure 3). It was grown commercially in the USA, Argentina, Brazil, Paraguay, Canada, Uruguay, South Africa, Mexico and Chile.

The second most dominant crop was biotech maize with stacked traits, which occupied 18.8 million hectares, equivalent to 17% (Table 3) of the global biotech area. It was grown commercially in the USA, Canada, South Africa, the Philippines, Honduras, Argentina, and Chile.

The third most dominant crop was biotech cotton grown over 10.8 million hectares in India, China, Brazil, Argentina, USA, Colombia, Mexico, Australia and South Africa. This is equivalent to 9% of the global biotech area.

Table 3. Dominant Biotech Crops in 2007

	Million Hectares	% Biotech
Herbicide tolerant Soybean	58.6	51
Stacked traits Maize	18.8	17
Bt Cotton	10.8	9
Bt Maize	9.3	8
Herbicide tolerant Maize	7.0	6
Herbicide tolerant Canola	5.5	5
Stacked Traits Cotton	3.2	3
Herbicide tolerant Cotton	1.1	1
Herbicide tolerant Alfalfa	<0.1	<1
Others	<0.1	<1
Total	114.3	100%

Source: Clive James, 2007.

Global Adoption of Biotech Soybean, Maize, Cotton, and Canola

Another way to provide a global perspective of the status of biotech crops is to characterize the global adoption rates as a percentage of the respective global areas of the four principal crops - soybean, cotton, maize and canola, in which biotechnology is utilized.

The data in Figure 3 indicated that in 2007, 64% of the 91 million hectares of the soybean planted globally were biotech—the same as in 2006. Biotech cotton was planted to 15 million hectares (43%) in 2007, an increase from 13.4 million hectares (38%) planted in 2006. The area planted with biotech maize exhibited an impressive 10 million hectare increase, with 24 % or 35.2 million hectares planted with biotech cotton in 2007 compared to 17% or 25.2 million hectares last year. Of the 27 million hectares of canola grown in 2007, 20% or 5.5 million hectares were planted with biotech canola. If the global areas (conventional and biotech) of these four crops are aggregated, the total area is 301 million hectares, of which 38% were biotech, up from 34% in 2006.

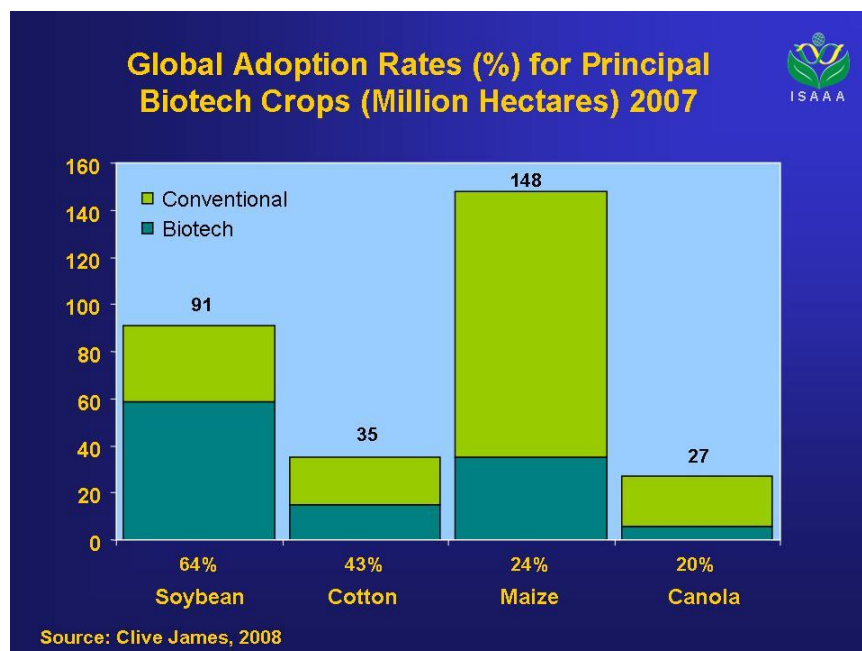


Figure 3. Biotech Crop Area as % of Global Area of Principal Crops, 2007 (Million Hectares)

The Global Value of Biotech Crops

In 2007, the global market value of biotech crops was US\$6.9 billion representing 16% of the US\$42.2 billion global crop protection market in 2007, and 20% of the ~US\$34 billion 2007 global commercial seed market. Of the US\$6.9 billion biotech crop market, US\$5.2 billion (76%) was in the industrial countries and US\$1.6 billion (24%) was in developing countries. The market value of the global biotech crop market is based on the sale price of biotech seeds plus any technology fees that apply. The accumulated global value, since biotech crops were first commercialized in 1996, is estimated at US\$42.4 billion. The global value of the biotech crop market is projected at over US\$7.5 billion for 2008.

Future Prospects

The future of biotech crops looks encouraging. The number of biotech crop countries, crop and traits, and hectareage are expected to double between 2006 and 2015, the second decade of commercialization. Developing countries like Burkina Faso and Egypt, and possibly Vietnam are potential candidates for adopting biotech crops in next one or two years. The lifting of the four-year ban on biotech canola in late November 2007 in the states of Victoria and New South Wales was a very important development for the future of biotech crops in Australia. The second decade of commercialization is likely to feature more growth in Asia. There will be continued

growth in stacked traits in North America, with strong growth expected in Brazil. The mix of crop traits will become richer with quality traits making their debut with implication for acceptance, particularly in Europe. The use of biotechnology to produce oral vaccines, and pharmaceutical and specialty products will also be featured. However by far, the most important potential distribution of biotech crops will be their contribution to the humanitarian Millennium Development Goals of reducing poverty and hunger by 50% by 2015, the end of the second decade of commercialization of biotech crops.

Taking all these global developments in both industrial and developing countries into account, the outlook for the period 2006 to 2015 points to continued growth in the global hectareage of biotech crops, up to 200 million hectares, with at least 20 million farmers growing biotech crops in up to 40 countries, or more.

Reference

James, C. 2007. Global Status of Commercialized Biotech/GM Crops: 2007. ISAAA Briefs No. 37. ISAAA: Ithaca, NY.

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