

An Update of the Role of GMOS in Current and Future Production Worldwide

by

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**International Service for the Acquisition
of Agri-biotech Applications (ISAAA)**

<http://www.isaaa.org>

Global Food, Feed and Fiber Security and the Alleviation of Poverty, Hunger and Malnutrition



Source: Clive James 2004

Global population

- **6 billion in 2000 - 9 billion in 2050**
- **Crops are principal source of food, feed and fiber – 6.5 billion MT/yr valued at \$1.7 trillion**
- **Challenge - double crop production on same area of land in a sustainable agricultural system by 2050 to produce affordable food/feed**
- **Contribute to alleviation of poverty (1.3 billion), hunger and malnutrition (850 million)**

ISAAA's Mission Statement



The mission of ISAAA is to :

- **Contribute to alleviation of poverty, hunger and malnutrition, by increasing crop productivity and income generation, particularly for small resource-poor farmers, and to bring about a safer environment and more sustainable agricultural development, through biotechnology transfer.**
- **Share knowledge on crop biotechnology so that the global community is well informed about the attributes and potential of the new technologies**

For more information, visit <http://www.isaaa.org>

Global Area of Biotech Crops, 1996 to 2004

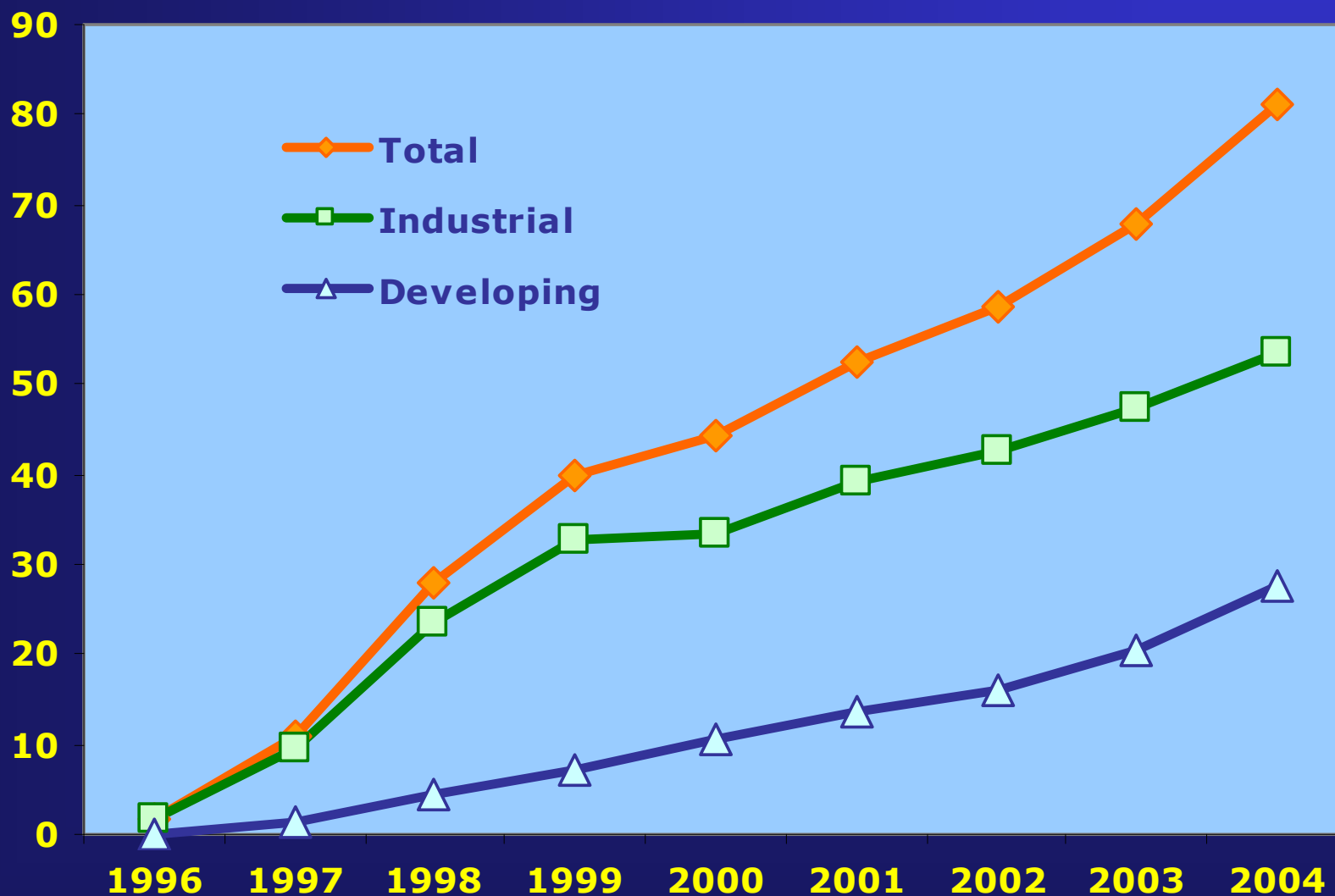


	Hectares (million)	Acres (million)
1996	1.7	4.3
1997	11.0	27.5
1998	27.8	69.5
1999	39.9	98.6
2000	44.2	109.2
2001	52.6	130.0
2002	58.7	145.0
2003	67.7	167.2
2004	81.0	200.0
Total	384.6	951.3

Increase of 20%, 13.3 million hectares or 32.9 million acres between 2003 and 2004.

Source: Clive James, 2004

Global Area (Million Hectares) of Biotech Crops, 1996 to 2004: Industrial and Developing Countries



Source: Clive James, 2004

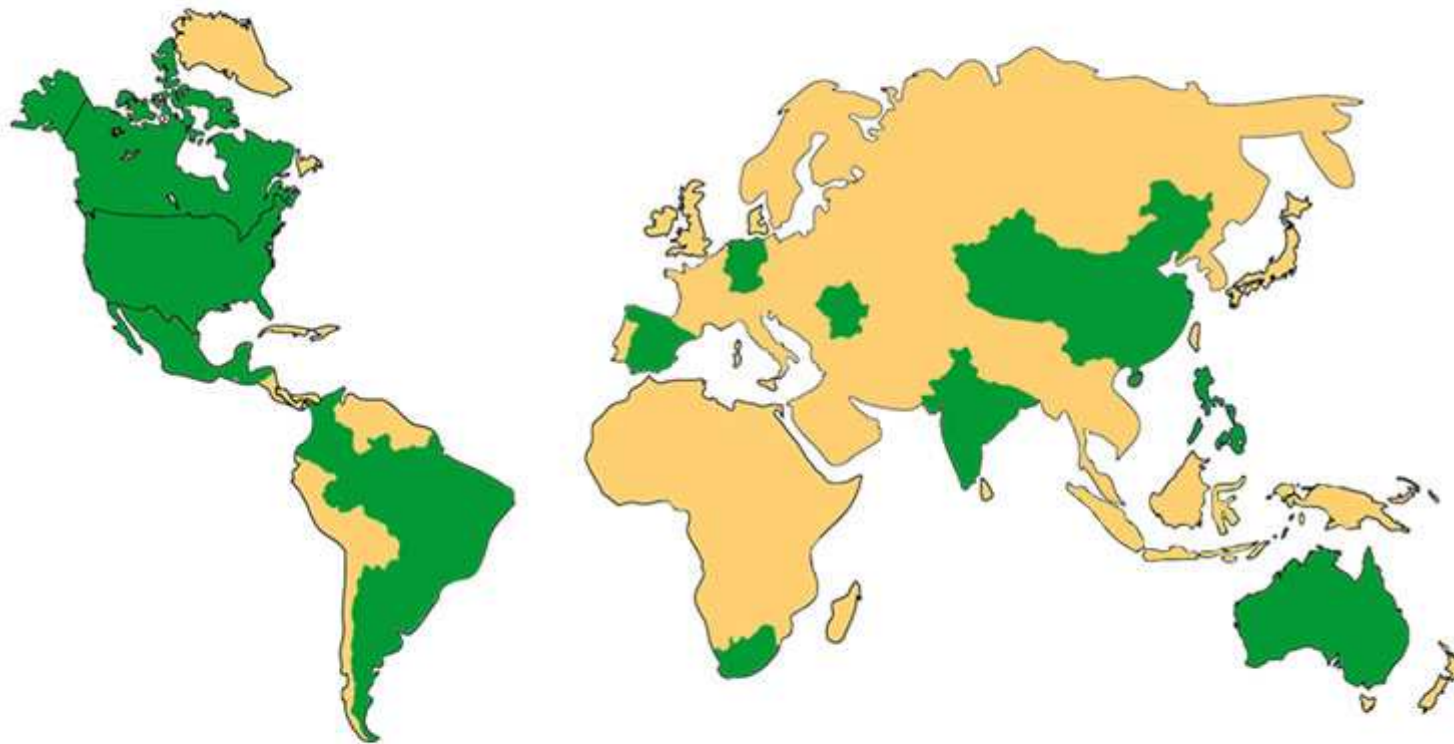
Near- record Growth in 2004

Highlights



- **Second highest year-on-year growth on record** - increase of 13.3 mill. hectares or 32.9 mill. acres
- **81 mill. hectares or 200 mill. acres** in 17 countries
- **8.25 mill. biotech farmers**, up from 7 mill. in 2003 - 1.25 mill. more biotech farmers in 2004
- **90%, or 7.5 mill, are small farmers** in dev countries
- **1996 – 2004, accumulated area of 385 m.hectares of biotech crops or 951 mill acres** (~ 1 billion acres)

Global Area (Million Hectares) of 17 Biotech Countries, 2004 – 11 of 17 are dev. countries

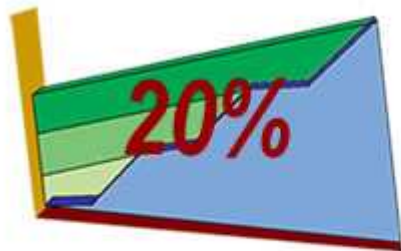


Biotech Mega-Countries

50,000 hectares, or more

USA	47.6 million
Argentina	16.2 million
Canada	5.4 million
Brazil	5.0 million
China	3.7 million
Paraguay	1.2 million
India	0.5 million
South Africa	0.5 million
Uruguay	0.3 million
Australia	0.2 million
Romania	0.1 million
Mexico	0.1 million
Spain	0.1 million
Philippines	0.1 million

Increase over 2003



■ 17 countries which have adopted biotech crops

In 2004, global area of biotech crops was 81 million hectares, representing an increase of 20% over 2003, equivalent to 13.3 million hectares.

Less than 50,000 hectares

Colombia Honduras Germany

* Developing countries

Developing countries record bigger gains in biotech area than industrial countries in 2004



Source; Clive James , 2004

- # of developing countries (11) growing biotech crops in 2004, was almost double the number of industrial countries (6)
- Biotech area in developing countries grew 7.2 million hectares, or 35% in 2004, compared with 6.1 million hectares or 13 % in industrial countries
- Five lead biotech crop developing countries - China, India, Argentina, Brazil and South Africa, with a combined population of 2.6 billion (40% of global) grew 26 million hectares of biotech crops in 2004, equivalent to 1/3 of global total

The five lead developing countries can impact global adoption and acceptance of biotech crops



- **China** - 7m small farmers benefit from Bt cotton in 2004.
- **India** – adopted Bt cotton in 2002; **x 5 fold increase to 500,000 has in 2004**; >15 biotech crops at R&D stage.
- **Argentina** - **#2 biotech country - 20% global area in 2004**
Benefits ~ \$2 billion/yr from biotech soy, maize & cotton
- **Brazil** – approved RR soy in 2003; 5 mill. has in 2004
Pot. benefits of \$1b/yr from soy, maize & cotton alone.
- **South Africa** – **Lead biotech country in Africa** – in 2004
biotech maize, white (food), yellow (feed), soy & cotton.

Source :Clive James 2004

US Biotech Crop Benefits -2003 & 2001



	2003	2001
# of Hectares	43 million has.	32 million has.
Pesticide saving	21.1 million kg	20.7 million kg
Production gain	2.4 million MT	1.7 million MT
Reduction in Production costs	\$1.5 billion	\$1.2 billion
<u>NET ECONOMIC GAIN</u>	<u>\$1.9 billion</u>	<u>\$1.5 billion</u>

Source: NCFAP 2004

Major Benefits of Biotech Crops



Source; Clive James , 2004

- **IMPROVED PRODUCTIVITY AND INCOME** – Increased yields of 5 to 40% and eq income gains of > \$4 billion in 2003;
- **biotech crop production value of \$44 billion in 2003**
- **PROTECT BIODIVERSITY** - Double crop production on same area of land - **save the forests/biodiversity - 13m ha loss/year in DCs**
- **ENVIRONMENTAL IMPACT** - Reduce need for external inputs - pesticides by 50% or 30,000 MT/yr in cotton alone - the future - fertilizers - **conservation of soil & water- SUSTAINABILITY**
- **YIELD STABILITY** - control of abiotic/biotic stresses – **promising progress with drought tolerance – major cause of famines**
- **SOCIAL BENEFITS** - **Alleviation of poverty,** improved environment & health- a time saving technology – **more affordable food, feed and fiber**

Challenges for the Future



- Improved Communication with Society. Knowledge-based decisions re Biotech crops

ISAAA's Global Knowledge Center (KC) on Crop Biotechnology & Network of Biotechnology Information Centers (BICs)

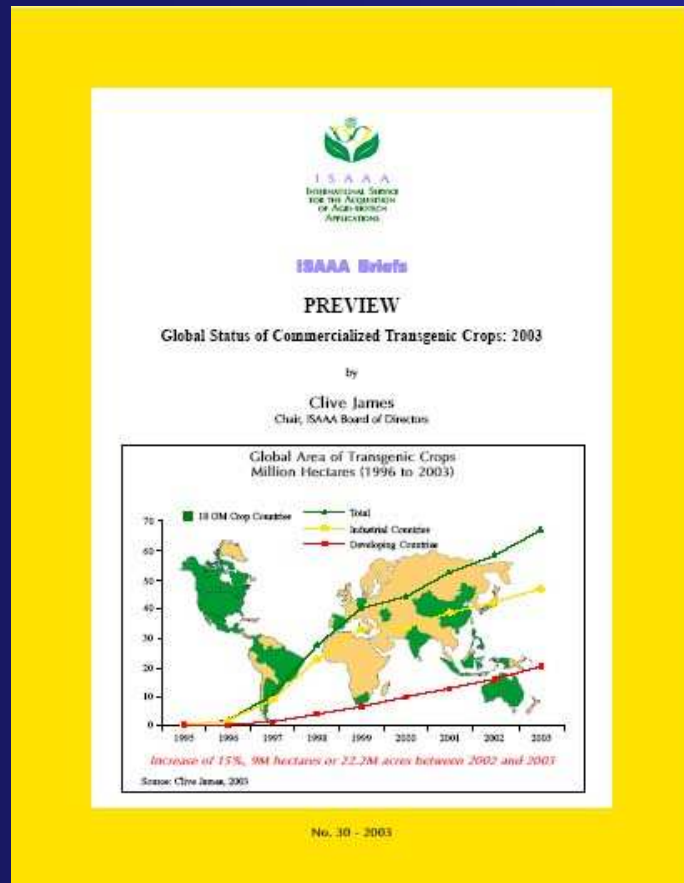


● 16 Near-term nodes

● *7 Future nodes

★ Global Knowledge Center (KC), based at ISAAA, S.E.Asia Center in the Philippines

Publications – Impact of ISAAA Annual Review



No. of media articles	>1000
No. of countries reached	~ 22
No. of people reached	~165 mill.
No. of translations	~ 12

90% of articles= positive or neutral

Annual Review – “Global Status of GM Crops: Preview 2003”

Challenges for the Future



- **Improved Communication with Society. Knowledge-based decisions re Biotech crops**
- **The Future of Biotech Crops ?**

2010 Projections for Biotech Crops



	2004	2010
# of Biotech Countries	17	~30
# of Farmers Planting Biotech Crops	8.25 million	~15 million
Global Area of Biotech Crops	81 mill. Has (200 mill. acres)	~150 mill. has (375 mill. acres)

Source: Clive James, 2004

Challenges for the Future



- **Improved Communication with Society. Knowledge-based decisions re Biotech crops**
- **Increase in # of Biotech countries, farmers and area**
- **Ensure that developing countries have option to use biotech crops in conjunction with conventional technologies to CONTRIBUTE to a more Sustainable Agriculture, Global Food, Feed & Fiber Security, Alleviation of Poverty and a Safer Environment**

Source: Clive James 2004

2005 – Global Focus on Alleviating Poverty

2005 - 10th Anniversary of Biotech Crops



- **February - Jeffrey Sachs' UN Study.**
- **March - Tony Blair's Africa Commission.**
- **July – G8 Summit –focus on alleviating poverty.**
- **September – UN General Assembly review of Millennium Development Goals set in 2000, including reduction of poverty by 50% by 2015.**
- **December – Hong Kong World Trade (WT) meeting on trade liberalization, especially for agricultural products from developing countries.**