
Biotech Bulletin 5

Global Uptake of GM Crops in 2003

Welcome to the fifth edition of Agrifood Awareness Australia Limited's (AFAA) Biotech Bulletin and the first for 2004. The Biotech Bulletin, produced on a monthly basis, aims to cover topical gene technology issues.

This edition of the Biotech Bulletin, entitled "Global uptake of GM crops in 2003", features comprehensive information on the status of genetically modified crops grown globally in 2003.

For the seventh consecutive year, farmers around the world have continued to increase the amount of genetically modified (GM) crops according to a report released recently by the International Service for the Acquisition of Agri-biotech Applications (ISAAA). The ISAAA is a non-profit organisation which aims to deliver the benefits of biotechnology to the poor in developing countries.

Biotech crops planted in 2003, increased by 15 per cent reaching 67.7 million hectares globally, an increase from 58.7 million hectares in 2002. This increase represents a 40-fold increase in hectares since the introduction of commercialisation of GM crops in 1996.

The report states, that nearly seven million farmers in 18 countries chose to plant GM crops in 2003, up from six million in 16 countries in 2002. Of these seven million farmers, more than 85 per cent were resource-poor farmers in developing countries planting GM cotton (mainly in China and South Africa). In addition, almost one-third of the global GM crops were grown in developing countries.

This Biotech Bulletin covers the recent findings of the 2003 ISAAA report in detail.

GLOBAL AREA OF GM CROPS

Since 1996, the global area of GM crops has continued to grow for the seventh consecutive year at a sustained rate of growth of more than 10 per cent per year. As tabled below 1.7 million hectares of GM crops were grown in 1996, increasing to 67.7 million hectares in seven years to 2003.

Global Area of Transgenic Crops 1996 – 2003 (million hectares)			
1996	1.7	2000	44.2
1997	11.0	2001	52.6
1998	27.8	2002	58.7
1999	39.9	2003	67.7

PRINCIPAL COUNTRIES

Six principal countries were responsible for 99 per cent of the global biotech crop area grown in 2003. This number was up from four in 2002. The United States of America (USA), Argentina, Canada and China continue to be the leading growers of these crops, with more than half of China's cotton crop being genetically modified for the first time. Other countries globally are starting to follow suit.

	COUNTRY	HECTARES	GM CROP	GLOBAL TOTAL (%)
1.	United States of America*	42.8 million	Canola, Cotton, Maize, Soybean	63
2.	Argentina*	13.9 million	Cotton, Maize, Soybean	21
3.	Canada*	4.4 million	Canola, Maize, Soybean	6
4.	Brazil*	3.0 million	Soybean	4
5.	China*	2.8 million	Cotton	4
6.	South Africa*	0.4 million	Cotton, Maize, Soybean	1

USA – the USA increased their growth rate by 10 per cent (3.8 million hectares) reflecting strong growth in both insect resistant (Bt) and herbicide tolerant maize, and continued growth in herbicide tolerant soybean.

Argentina – the GM crop area in Argentina grew at three per cent, with growth in Bt maize. The GM soybean adoption rates were significantly close to the 100 per cent in the previous ISAAA report of 2002.

Canada – The GM crop area of canola, maize and soybean in Canada grew 26 per cent between 2002 and 2003 to reach 4.4 million hectares with increases totalling almost one million hectares.

China - increased its Bt cotton area for the fifth consecutive year from 2.1 million hectares in 2002, to 2.8 million hectares in 2003. This is equivalent to 58 per cent of the total cotton area of 4.8 million hectares in 2003.

South Africa – increased its combined area of GM maize, soybean and cotton to 0.4 million hectares in 2003 with particularly strong growth in white maize used for food, which has increased significantly from 6,000 hectares in 2001 to 84,000 hectares in 2003.

Of the six leading GM crops countries, China and South Africa had the highest year-on-year increase with a 33 per cent growth rate.

Following the six principal countries above, the subsequent countries planted significant amounts of GM crops in 2003.

	COUNTRY	HECTARES	GM CROP
7.	Australia*	0.1 million	Cotton
8.	India*	0.1 million	Cotton
9.	Romania*	>0.05 million	Soybean
10.	Uruguay*	>0.05 million	Maize, Soybean
11.	Spain	>0.05 million	Maize
12.	Mexico	>0.05 million	Cotton, Soybean
13.	Philippines	<0.05 million	Maize
14.	Colombia	<0.05 million	Cotton
15.	Bulgaria	<0.05 million	Maize
16.	Honduras	<0.05 million	Maize

*During 2003 ten countries planted more than 50,000 hectares of biotech crops.

Germany and Indonesia	50,000 hectares grown or less
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There is expectation that the global area and the number of farmers planting GM crops will continue to grow in the future, particularly in the six leading countries.

PRINCIPAL CROPS

Globally, growth continued in all four principal commercialised GM crops (soybean, maize, cotton and canola) from 2002 to 2003. Genetically modified soybeans continue to lead all hectares grown globally with an increase of nearly 13 per cent to 41.4 million hectares (61 per cent of soybeans globally).

GM CROP	2003 (million hectares)	2002 (million hectares)	2001 (million hectares)
Soybean	41.4	36.5	33.3
Maize	15.5	12.4	9.8
Cotton	7.2	6.8	6.8
Canola	3.6	3.0	2.7

ADOPTION RATES

Statistics detailed below show the adoption rates of the four principal crops shown as a percentage of their global respective areas, compared with the 2001 and 2002 areas. The data indicates that in 2003, 55 per cent of the 76 million hectares of soybean planted globally were transgenic, up from 51 per cent in 2002 and 46 per cent in 2001. There has been quite a substantial increase in all principal crops over this period.

GM CROP	2003	2002	2001
Soybean	55% of 76 million hectares of soybean planted were GM	51%	46%
Maize	11% of 140 million hectares of maize planted was GM	9%	7%
Cotton	21% of the 34 million hectares of cotton planted were GM	20%	20%
Canola	16% planted to a GM variety	12%	11%
GLOBAL TOTAL	25% of total global cropping area (272 million hectares) was planted to a GM variety	22%	19%

DOMINANT CHARACTERISTICS

During the seven year period 1996 to 2003 there have been two consistent dominant GM crop traits - herbicide tolerance and insect resistance.

- Herbicide tolerant soybean dominates, occupying 41.4 million hectares or 61 per cent of the global total and grown in seven countries, an increase from 36.5 million hectares in 2002;
- Insect resistance (Bt) maize was second occupying 9.1 million hectares, equivalent to 13 per cent of the global total and grown in nine countries. An increase from 7.6 million hectares in 2001.

According to the report, more than one-fifth of the global crop area of soybeans, corn, cotton and canola acres are now GM crops.

GM CROP VALUE

In 2003, the market value globally of GM crops is approximately US\$4.5 to US\$4.75 billion having increased from US\$4 billion in 2002 and US\$3.8 billion in 2001. The market value of the global transgenic crop market is based on the sale price of transgenic seed plus any technology fees that may apply. It is predicted the global value of the GM crop market will reach US\$5 billion or more by 2005.

THE FUTURE

The ISAAA report believes that commercialised GM crops will continue to grow in 2004 and beyond, delivering significant economic, environmental, social and consumer benefits to both small and large farmers globally.

The proportion of small farmers from developing countries growing GM crops is expected to increase significantly. New GM cotton and corn products are expected to be commercialised within the next few years, further increasing biotechnology's presence around the world.

It is predicted that as many as 10 million farmers in 25 countries or more, could be planting GM crops within five years and that adoption rates would only increase as crops with new GM traits become available.

Despite the continuing public acceptance debate and challenges associated with GM crops, the area planted to GM crops and the number of farmers growing GM crops have continued to grow at a double digit rate or more, since their introduction in 1996, with seven million farmers benefiting from the technology in 2003.

For further information on the global uptake of GM crops in 2003 see the Executive Summary "ISAAA Briefs No. 30-2003 – Global Status of Commercialised Transgenic Crops: 2003" at www.isaaa.org

ANIMATED GENE TECHNOLOGY ILLUSTRATIONS

Agrifood Awareness Australia Limited recently located two gene technology animations that appeared in the AgBioView email forum in December. Both illustrations detail the cycle of how GM plants are developed and how to make GM plants.

Click on the links below to view the animations.

http://www.agwest.sk.ca/sabic_index_tp.shtml

<http://www.colostate.edu/programs/lifesciences/TransgenicCrops/animation.html>

We look forward to your feedback on this newsletter.

For further information, please contact the AFAA office on (02) 6273 9535 or via email – info@afaa.com.au

January 2004

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