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GMOs Guiding Meaningful Opinions



The Gene Technology Newsletter for the
Horticulture Industry

February 2007

Welcome to this edition of *GMOs*, the bi-monthly gene technology newsletter for the horticultural industry. *GMOs* is compiled by Agrifood Awareness Australia Limited in conjunction with HAL.

We welcome any comments or enquiries you may have regarding the content of this publication. We also encourage the use of this information in industry newsletters and web pages.

Knowledge Bank

LATEST GM CROP AREA FIGURES

The latest statistics regarding the global area of GM crops were released in January by the International Service for the Acquisition of Agri-biotech Applications (ISAAA).

In 2006, the global area of GM crops increased for the tenth consecutive year at a rate of 13 per cent, reaching 102 million hectares. This growth represents a 60-fold increase from 1996 when the technology was first introduced.

The number of countries planting GM crops rose to 22 in 2006, with Slovakia planting GM corn for the first time. There are now six European Union countries planting GM crops.

The USA, Argentina, Brazil, Canada, India, and China continue to be the principal adopters of GM crops globally.

The dominant GM crops continue to be:

Crop	Area (millions of hectares)	Percentage of GM crop area
Soybean	58.6	57
Maize	25.2	25
Cotton	13.4	13
Canola	4.8	5

Herbicide tolerance and insect resistance also dominate the GM varieties grown. Sixty-eight per cent of GM crops grown are herbicide tolerant; 19 per cent are insect resistant; and,

13 per cent are both insect resistant and herbicide tolerant.

Other highlights from the report include:

- 10.3 million farmers planted GM crops in 2006, up from 8.5 million farmers in 2005. Of these, 90 per cent were resource-poor farmers from developing countries.
- A new GM crop, herbicide tolerant lucerne, was commercialised for the first time in the USA in 2006. The variety is the first perennial GM crop to be commercialised and was seeded on 80,000 hectares, or approximately five per cent of the national lucerne crop.
- A new variety of herbicide tolerant cotton was also launched in 2006 and planted on 800,000 hectares – mainly in the USA with a smaller hectareage in Australia.

For more information:

www.isaaa.org/Resources/Publications/briefs/35/executivesummary/default.html

Hot Issues

GM POTATO CONTINUES TO NAVIGATE EU APPROVAL PIPELINE

In December, the Standing Committee of European Union environment experts failed to reach a qualified majority for approval of the commercial cultivation of a GM potato

The new GM potato “Amflora” has been developed by BASF and has a modified starch content and is intended for industrial uses only, such as paper making. However, in a separate application, BASF has also filed for the approval of processing waste of Amflora to be used for feed.

Based on a positive safety assessment by the European Food Safety Authority (EFSA), which concluded that “the GM potato EH92-527-1 is unlikely to have an adverse effect on

human and animal health or the environment in the context of its intended uses”, the European Commission had recommended approval.

The decision will now be passed on to the EU Ministers for the Environment, who will have three months to come to a conclusion. It is expected that the ministers also will fail to achieve a qualified majority in favour of the approval and, in this case, the decision will lie with the European Commission. If approved by the European Commission, BASF hopes the GM potato will be available for cultivation in 2007.

For more information:

www.gmo-compass.org/eng/home/

GERMAN ANIMAL FEED STUDY

German researchers have released the results of 18 studies conducted on the nutritional value and safety of feeds derived from GM crops since 1997.

The studies were undertaken at the Federal Agricultural Research Centre in Germany, and involved dairy cows, growing bulls, growing and finishing pigs, laying hens, chickens for finishing as well as growing and laying quails. Animal studies were carried out for nutritional and safety assessment such as digestibility, feed intake, health and performance of target animal species and quality of food of animal origin. Reproduction was also studied in a 10-generation experiment with quails and a 4-generation experiment with laying hens.

The study concluded that, in agreement with more than 100 animal studies available to date, results showed no significant differences in the nutritional value of feeds currently available from GM crops, in comparison with their non-GM counterparts. To date, no fragments of recombinant DNA (introduced DNA) have been found in any organ or tissue samples from animals fed GM crops.

For more information: info@afaa.com.au

ABARE OUTLINES IDENTITY PRESERVATION COSTS ASSOCIATED WITH GM GRAINS

ABARE has released a report outlining a framework for estimating identity preservation costs and for establishing who bears those costs, and concludes that such costs appear both “modest and manageable.”

The costs of identity preservation vary according to factors such as seeding rates, the mix of grains produced, climate and receival site characteristics.

On average, 85 per cent of the costs, will be incurred on farm because of the need for:

- Certified planting seed (guaranteeing that the unintended presence of GM materials does not exceed specified levels)
- Various crop management techniques (including appropriate separation distances and control of ‘volunteer’ growth)
- Cleaning after harvesting, handling, storing and transporting GM grain types.

The remainder of these costs may be incurred by bulk handlers and are related to additional time taken switching between grains at receival sites, and the possible requirement for testing for the presence of GM material.

The report states that “if the additional identity preservation costs are attributed to non-GM canola growers (because it is they who hope to benefit from price premiums), the estimated cost averages \$14.48 for each tonne of canola delivered, representing four to six per cent of the average farmgate price for canola in a typical year.”

For more information:

www.abareconomics.com/publications_html/crops/crops_06/GM_grains.pdf

CSIRO IDENTIFIES MARKERS FOR WHEAT RUST RESISTANCE

CSIRO Plant Industry researchers have identified a DNA marker for two important rust resistance genes in wheat. These two genes are often inherited together and provide wheat plants with improved protection against leaf rust and stripe rust – two major diseases of wheat in Australia and worldwide.

CSIRO scientist Evans Lagudah said that the DNA marker is 99 percent effective in determining the presence of the two genes in different wheat from Australia, India, China, and North America. The markers are now being used in Australia and worldwide.

For more information:

www.csiro.au/csiro/content/standard/ps2kc.html and www.csiro.au/files/files/pbb8.pdf.

NZ TO REVIEW GM IMPORT STANDARDS

In December, New Zealand's Ministry of Agriculture and Forestry (MAF) stated in a media release that it was investigating the importation of 4,420 kilograms of GM sweet corn seeds from the USA that had been inadvertently cleared by MAF's Quarantine Service in October, despite not being approved for use in New Zealand.

MAF announced that those sweet corn crops planted with the affected seed had been located, and would be destroyed, and that it had commissioned an independent enquiry into the circumstances surrounding the sweet corn seed imports.

For more information:

www.maf.govt.nz/mafnet/press/index.htm#Issues%20in%20the%20News

Regulatory Updates

OGTR RESEARCH LICENCE APPLICATION UPDATE

The Regulator has prepared a risk assessment and risk management plan (RARMP) for the application below. Submissions close on **12 March 2007**.

Reference	Crop/characteristic	Developer
DIR 069/2006	Field trials of herbicide tolerant canola and Indian mustard.	Bayer CropScience Pty Ltd

For more information:

www.ogtr.gov.au/new/index.htm

Reports of Interest

TEN YEARS OF GM CROPS IN ARGENTINA

According to a study undertaken by ArgenBio, GM crops have significantly benefited Argentina. The report authors Drs Eduardo Trigo and Eugenio Cap, state that the use of herbicide tolerant soybeans, and pest resistant maize and cotton varieties has given the country more than a 20 billion dollar (US) profit. These benefits are broken down below.

Crop	Total benefit	How distributed
Herbicide tolerant soybean (1996-2005)	US\$19.7 billion	77 per cent - farmers 13 per cent - National Government 5 per cent - herbicide suppliers 4 per cent - seed distributors
Pest resistant maize (1998-2005)	US\$481.7 million	43 per cent - farmers 41 per cent - seed suppliers 16 per cent - National Government
Pest resistant cotton (1998-2005)	US\$20.8 million	86 per cent - farmers 9 per cent - seed suppliers 5 per cent - National Government

The study also asserts that herbicide tolerant soybean use could have contributed to the creation of more than one million jobs.

For more information:

www.argenbio.com/h/nuevo_estudio/10anos.php

ECONOMIC IMPACT OF GM CROPS WORLDWIDE: A REVIEW

This report was compiled by the Joint Research Centre, which is described as "a research based policy support organisation and an integral part of the European Commission... providing the scientific advice and technical know-how to support EU policies." Released in December 2006, the report concludes:

- Adoption of GM crops has taken place at a rapid rate and is driven by a number of factors including on-farm and off-farm benefits (for example, reduced production costs, yield increases, crop management simplification, increased free time, and larger off-farm incomes).
- Adoption of dominant GM crops and on-farm economic gains have benefited both small and large farmers.
- Bt (insect resistant) cotton adoption has resulted in a significant decrease in the use of insecticides in all cases studied.
- Bt maize adoption has resulted in only a small decrease in insecticide use because the pests Bt maize is

designed to resist were not usually controlled by insecticide applications.

- The adoption of herbicide tolerant soybean has resulted in the replacement of several herbicides by one single product that is considered to be less toxic. Use of this herbicide has increased.
- Herbicide tolerant soybean adoption has been associated with reduced fuel consumption and the adoption of reduced soil tillage practices.

For more information:

www.jrc.es/home/pages/detail.cfm?prs=1458

ETHICAL FRAMEWORK

The Gene Technology Ethics Committee (GTEC), established to provide advice on ethical issues to the Gene Technology Regulator and the Gene Technology Ministerial Council, has released its *National Framework for the Development of Ethical Principles in Gene Technology*.

The purpose of this National Framework is to provide the Australian community, particularly scientists working in gene technology, with a national reference point for ethical considerations that may be taken into account when developing values and ethical principles relevant to environmental and human health issues in gene technology. The National Framework is not legally enforceable, rather it is intended to be used as a guide.

GTEC has developed nine principles that should guide researchers utilising gene technology. One principle is “minimise risks of harm or discomfort to humans and animals likely to be adversely affected by gene technology.”

For more information:

www.ogtr.gov.au/rtf/committee/gtecethicalprincip.c.rtf

Research Updates

UK – Scientists at the Warwick Horticultural Research Institute are looking to identify genes in **broccoli** to extend its shelf-life and maintain its nutritional value for longer.

USA – Researchers at Texas A&M University’s Vegetable and Fruit Improvement Center have recently published results of their

research to develop drought-resistant **tomatoes**. The team made tomato plants over-express the gene, AVP1, which resulted in stronger, larger root systems and that resulted in roots making better use of limited water. According to the research findings, regular or control tomatoes used in the experiment suffered irreversible damage after five days without water, as opposed to the GM tomatoes, which began to show signs of damage after 13 days but rebounded completely as soon as they were watered.

USA – Researchers are looking to **cauliflowers** to identify genes and define molecular mechanisms that regulate nutrients in plant-based foods. They have isolated a gene which results in high levels of beta-carotene in food crops. The research may make a huge impact on vitamin A deficiency, which has been reported to affect some 250 million children worldwide. These studies can help increase understanding about carotenoid synthesis and accumulation, and could lead to increased carotenoid content in other food crops.

Market Research

AGBIOTECH RESISTANCE DECLINING IN SWITZERLAND

Market research undertaken over a six-year period from 2000 to 2006 has found that resistance to the application of gene technology in agriculture is steadily and slowly declining in Switzerland. More than 2,000 people were interviewed from German- and French- speaking regions.

The 2006 results showed that 45 per cent were against the use of gene technology in agriculture, 31 per cent advocated it, while 24 per cent were still undecided. This is in contrast to the results from 2000, where 58 per cent of respondents expressed negative attitude towards gene technology.

The most important differences in the single population groups concerned the French-speaking region in which opponent (31 per cent) and advocate (33 per cent) were almost equally strong. Generally, greater acceptance of gene technology in agriculture was notable among interviewees under the age of 30. The statistical reduction of resistance towards agricultural applications may be attributed to better information: through increasing global experience with green gene technology, individuals originally identifying themselves as

opponents have become more broadly informed. However, the increase in undecided individuals may point to the need for further public information.

For more information: www.gmo-compass.org/eng/news/messages/200612.docu.html#79.

Events

WAFF GM POLICY DAY

Date: 28 February 2007

Description: This is WA Farmers' annual GM policy making day. International markets and liability will be two topics of focus, with Max Foster from ABARE to discuss the former and Karrine Ludlow from the Australian Centre for Intellectual Property in Agriculture (ACIPA) to discuss the latter.

Location: Perth

Email: andymcmillan@waff.org.au

Telephone: 08 9486 2100

Website: www.waff.org.au/default.asp

ABARE OUTLOOK 2007 CONFERENCE

Date: 6-7 March 2007

Description: Outlook 2007 is Australia's premier commodity forecasting conference. Sessions include the economic overview, farm performance, and trade, with topics including livestock and crops, and natural resources and climate also featuring on the program.

Location: Hyatt Hotel, Canberra

Email: Erica Bruen - ebruen@abare.gov.au

Telephone: 02 6272 2303

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Regulation

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Science

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Public Awareness

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