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## GENETICALLY MODIFIED CANOLA

### A Resource Guide for Farmers

The following is a reference guide for farmers, providing information about the intentional release of genetically modified (GM) canola. The guide provides a brief on the information available on the two GM canola applications in the pipeline in Australia, including information on government and industry guidelines, managing canola in the supply chain, agronomic and market issues, the science behind GM canola and the overseas experience.

#### 1. REGULATION

After six years of field trials, two companies, Monsanto Australia and Bayer CropScience, applied to Australia's Gene Technology Regulator for the limited commercial release of GM canola for use in the Australian cropping system.

The applications were lodged at the Office of the Gene Technology Regulator (OGTR) in June and July 2002. Under the Australian Gene Technology Act the Regulator has 170 working days to assess the applications.

In November 2002, the Gene Technology Regulator Dr Sue Meek, announced the OGTR would 'stop the clock' on the two applications until more information became available relating to technology stewardship (work undertaken by the Gene Technology Grains Committee [GTGC]) and crop management.

For further information:

<http://www.ogtr.gov.au/rtf/media/stopclockcanola.rtf>

This information was supplied to the Regulator, however in February 2003 the Regulator made another announcement that the clock would remain stopped until additional technical information was supplied by the applicants, Monsanto and Bayer CropScience.

For further information:

<http://www.ogtr.gov.au/ir/dir020.htm>

In April 2003 the Gene Technology Regulator released for public comment a **Risk Assessment and Risk Management Plan** for Bayer CropScience's application to commercially release GM canola in Australia.

The Plan was released for public comment for an extended eight week period of public scrutiny and comment, with comments due at the end of May.

In late July 2003 following extensive evaluation and public consultation, the Regulator announced the **commercial release** of Bayer CropScience's InVigor® hybrid canola.

The Regulator concluded during the extensive assessment period that the Bayer CropScience variety of GM canola is as safe to human health, safety and the environment as non-GM canola.

The InVigor® canola variety is intended to be used as oil for human food, or in animal feed, in the same way as conventional (non-GM) canola.

The approval of this application will result in a phased-in release of GM canola and will be undertaken in consultation with growers, industry bodies and State governments.

As this GM canola variety is the first licence to be issued for the commercial release of GM canola in Australia, the Regulator intends to report on the implementation of the InVigor® canola release after three years of commercial plantings.

The Regulator's full determination on the Bayer licence can be found on the OGTR website <http://www.ogtr.gov.au/ir/dir021.htm>.

The **Risk Assessment and Risk Management Plan** for Monsanto's application is still pending.

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## 2. MANAGING CANOLA IN THE SUPPLY CHAIN

Under Australian gene technology legislation the OGTR regulates for human health, safety and the environment. The Regulator does not take into consideration marketing issues. As a result other organisations (government and industry) have addressed this issue in several ways.

The **Plant Industries Committee** (PIC) reports on farming systems and marketing issues and is a sub-committee of the Primary Industry Ministerial Council's Standing Committee. The Committee consists of Australian Commonwealth, State and Territory, and New Zealand Minister's responsible for agriculture, soil, water and rural adjustment policy.

PIC released their **Guidelines for Industry Stewardship Programs and Crop Management Plans** in November 2002 for the management of GM crops in Australian farming systems. The Guidelines are designed to assist the management of broadacre crop varieties with novel traits developed through the application of gene technology.

The objective of the Guidelines is to influence the development of industry stewardship that will enable primary producers, other participants in the value chains, consumers and the community at large to fully realise the economic, environmental and social benefits offered by GM crops, while managing any risks associated with their use.

For more information or to obtain a copy of the Guidelines contact:  
[rees.rob@saugov.sa.gov.au](mailto:rees.rob@saugov.sa.gov.au)

### WHAT IS THE GTGC?

The Gene Technology Grains Committee (GTGC) is a grains industry and supply chain body.

The GTGC includes representatives from across the grains industry including scientists, producers, bulk handlers, food processors, technology providers, and the organics industry and observers from the Commonwealth and State Governments.

In December 2002, the GTGC released for public comment a comprehensive set of protocols to manage the co-existence of GM and non-GM canola production in Australia. The **Canola Industry Stewardship Protocols for Coexistence of Production Systems and Supply Chains** have been developed following extensive consultation within the grains industry and draw on best

practice scientific research and Australian and overseas supply chain experience.

The Protocols set out procedures and responsibilities designed to ensure final product integrity, ensure full traceability of grain through the supply chain and establish appropriate sampling and testing procedures.

The Protocols cover the entire supply chain: pre-farm, on-farm and post-farm elements and the links between.

For further information:

<http://www.avcare.org.au/documents/Canola%20Industry%20Stewardship%20Protocols.pdf>

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## 3. MARKETS AND AGRONOMIC ISSUES

There have been various reports released on the marketing and agronomic issues of GM canola. Following is a brief summary of the reports, including links to the reports for further information.

### Report A

The Productivity Commission, the Australian Government's principal review and advisory body on microeconomic policy and regulation, released their report, **Modelling Possible Impacts on GM Crops on Australian Trade** in November 2002.

The Productivity Commission conducts public inquiries and research into a broad range of economic and social issues affecting the welfare of Australian's.

The Report provides an analysis of the economic and trade implications of the introduction of GM technology in the grains sectors, excluding wheat and oilseeds.

The paper contains a detailed review of the evidence of the on-farm benefits achieved from the main GM crops commercialised to date. It assesses the consumer and regulatory environments in which GM crops are being introduced, including any associated costs.

For further information:

<http://www.pc.gov.au/research/staffres/gmcrops/index.html>

### Report B

According to the Australian Bureau of Agricultural and Resource Economics (ABARE) any decision to commercially release GM crops into Australia needs to take into account not only the agronomic and environmental factors, but also marketing factors.

This report, **Genetically Modified grains: market implications for Australian grain growers**, released in 2001 explores the pros and cons of adopting these crops. This report is aimed at assisting producers and policy makers in agricultural industries in making informed decisions about whether to adopt GM crops.

This report is available on-line at:

<http://www.abareconomics.com/research/foodbiosecurity/gmo.htm>

#### **Report C**

In April 2003, ABARE updated the above report with newly available data from field trials of GM canola in Australia. ABARE has analysed aspects of the economics of the commercial release of GM canola in Australia with the results reported in, **GM canola - What are its economics under Australian conditions?**

The data can be downloaded at:

<http://www.abareonlineshop.com/product.asp?prodid=12526>

#### **Report D**

The most recent report released by ABARE in July 2003, **Genetically modified grains - market implications for Australian grain growers**, outlines key market access conditions or restrictions that are affecting international trade in GM grains and assesses their impact on trade patterns, such as regulatory arrangements and labelling requirements.

The report is aimed at assisting growers and other relevant policy makers in the agricultural industry in making decisions about whether to adopt GM crops.

Copies of the report can be downloaded at:

<http://abareonlineshop.com/product.asp?prodid=12559>

#### **Report E**

The Western Australian Department of Agriculture released a report in March 2003, examining the global canola market situation to assess the marketing risk from introducing GM canola into the state.

The report, **Assessment of the International Market for Genetically Modified Canola**, researched the 2001/02 canola export market and concluded that the introduction of GM canola would have minimal impact on the Western Australian canola industry in the current environment, with over 90 per cent of WA's current canola grain markets unaffected if GM canola is introduced.

Copies of the full report can be found at:

<http://www.agric.wa.gov.au/biotechnology/gmcanola/intmarket/>

#### **Report F**

The Australian Oilseeds Federation released the report **Genetically Modified Canola in Australia – Agronomic and Environmental Considerations** in December 2002, based on research compiled from Australia and overseas examining the agronomic and environmental impact of GM canola.

The Report reviews the pollen flow between GM and non-GM canola and weed species, as well as the incidence and survival of canola volunteers. The aim of the report was to bring together the best scientific data from around the world to allow the Australian canola industry to assess the benefits and risks of its adoption in a fully informed way.

Copies of this report can be obtained by contacting the Australian Oilseeds Federation on (03) 9533 2623.

#### **Report G**

Canola is now the third most important winter grain crop grown in Australia, its beneficial effect on wheat yields as part of a rotation makes it critically important for the cropping belt.

Weeds however are a significant issue for canola. The proposed introduction of two lines of GM canola with tolerance to either Roundup® or glufosinate-ammonium herbicides have the potential to provide farmers with other weed control options.

A report released in March 2003 by Rob Norton from the University of Melbourne, suggests significant economic and environmental advantages from the introduction of new GM herbicide-tolerant canola varieties. The adoption of these varieties suggests farmers will have additional options that include weed control, earlier sowing and the replacement of triazine tolerant (TT) canola. The report also suggests that the adoption of GM canola in Australia would potentially be worth \$135 million annually to our farmers.

Copies of the full report, **Conservation farming systems and canola** can be downloaded at:

<http://www.avcare.org.au/documents/Avcare%2026.03.03.pdf>

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#### 4. SCIENCE BEHIND GM CANOLA

##### Pollination

The potential for canola to cross pollinate with other plants and create herbicide tolerant weeds or increase herbicide resistance is a concern raised by farmers and other industry stakeholders.

Comprehensive research has been carried out by various scientists Australia-wide on the gene flow of GM canola. Two reports are currently available.

##### Report A

The Bureau of Rural Sciences (BRS) has produced a report investigating Australian and international literature in relation to the unintentional gene flow via cross pollination from GM crops. The report entitled, **Gene flow study: Implications for the release of genetically modified crops in Australia** can be found at:

<http://www.affa.gov.au/content/publications.cfm?ObjectID=EDA01F51-FFB1-46E6-B8FC8F43A5264CBF>

##### Report B

In 2000, a comprehensive study on the spread of canola pollen was undertaken by reproductive ecologist Dr Mary Rieger of the Cooperative Research Centre for Australian Weed Management and the University of Adelaide, to quantify at a landscape level the gene flow that occurs from herbicide-resistant canola crops to nearby crops not containing herbicide resistance genes.

The study found that canola pollen can travel considerable distances but that the amount of gene flow is minimal.

The methods used were very sensitive, with the detection rate 100-fold lower than the proposed international standard of one per cent. Such a detection rate would comply with the current regulation of GM crops around the world.

For further information or to obtain a copy of the report visit:

[http://www.weeds.crc.org.au/documents/farmers\\_gm.pdf](http://www.weeds.crc.org.au/documents/farmers_gm.pdf)  
or email: [christopher.preston@adelaide.edu.au](mailto:christopher.preston@adelaide.edu.au)

<http://www.grdc.com.au/growers/gc/gc39/canola.htm#gm>

##### Herbicide tolerance

The release in March 2003 of the Department of Agriculture, Fisheries & Forestry – Australia (AFFA) publication, **Agricultural Biotechnology: Herbicide Tolerant Crops in Australia** is timely.

With the introduction of herbicide tolerant cotton in Australia and the current applications for commercial release of GM canola before the OGTR, the report examines herbicide tolerant crops, particularly GM (or transgenic) herbicide tolerant crops, the reasons they are being developed and the rationale behind their use by farmers.

The benefits and risks from growing these crops are examined, along with the strategies used to manage the risks. The aim is to inform the public debate about the technology and its potential in Australian agriculture.

To obtain a copy of the report visit:

<http://www.affa.gov.au/content/output.cfm?ObjectID=4BEECF75-993E-48F7-A26AA2BE5C964B80>

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#### 5. OVERSEAS EXPERIENCE

In Canada, GM canola has been grown commercially since 1996. In 2000 the Canola Council of Canada undertook a survey of 650 members to assess their experience with GM canola. The Canadian experience with similar canola varieties to the varieties currently being evaluated for the Australian cropping system, shows benefits such as improved yields, better returns, easier and better weed control, cost reductions and easier clean-up of paddocks.

To access the grower responses go to:

[http://www.canola-council.org/production/gmo\\_main.html](http://www.canola-council.org/production/gmo_main.html)

For a general overview of canola in Canada go to:

<http://www.canola-council.org/>

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#### 6. FOOD AND FEED

The presence of GM food in our supply chain has stimulated much discussion and concern about what these foods are, whether they are safe and how this modern technology should be used.

The issue of food safety is often raised as one of the major concerns people have about GM foods. Follow this link to the Food Standards Australia New Zealand (FSANZ), formerly ANZFA, brochure **Safety Assessment process for genetically modified food**. The booklet explains FSANZ's role in assessing the safety of GM foods – an assessment all GM foods must undergo before they are allowed to be sold in Australia and New Zealand.

[http://www.foodstandards.gov.au/srcfiles/gm\\_and\\_consumer\\_pub02\\_00.pdf](http://www.foodstandards.gov.au/srcfiles/gm_and_consumer_pub02_00.pdf)

In December 2001 Australia adopted **new labelling laws for food produced using gene technology**.

Standard A18 (food produced using gene technology) ensures that all GM crops, animals and microorganisms are assessed and approved by FSANZ as safe before they can be used for food or in food processing.

Food or ingredients labelled 'genetically modified' either contain new genetic material or protein as a result of genetic modification or have altered characteristics – eg changed nutritive values compared to conventional food. Under these labelling laws, oil from GM canola would not be labelled as refined oils contain no genetic material/DNA and are therefore the same as oil from a non-GM crop.

Food products from six GM commodities mainly grown overseas may be in Australian supermarkets. These are soybean, canola, corn, potato, sugar beet and cotton.

For more information:

[http://www.anzfa.gov.au/srcfiles/Standard152\\_GM\\_%20v62.pdf](http://www.anzfa.gov.au/srcfiles/Standard152_GM_%20v62.pdf)

<http://www.foodstandards.gov.au/assistanceforindustry/userguides/labellinggeneticallymodifiedfooduserguide/attachment3.cfm>

SAFEMEAT in conjunction with Meat & Livestock Australia (MLA) released a brochure on the labelling laws for **red meat food businesses** which can be accessed at: [http://www.mla.com.au/uploads/templates/otherpdf/GMF\\_labelling.pdf](http://www.mla.com.au/uploads/templates/otherpdf/GMF_labelling.pdf)

The primary role of SAFEMEAT is to oversee and promote sound management systems to deliver safe hygienic products to the market place. From 2002 – 2004 SAFEMEAT has identified one of its eight key programs as biotechnology; monitoring the changing market and consumer demands in relation to biotechnology issues.

SAFEMEAT members are made up of industry representatives from the Australian Meat Council, National Meat Association of Australia, Cattle Council of Australia, Australian Lot Feeders' Association, Australian Livestock Exporters' Council Ltd, Sheepmeat Council of Australia, AFFA, NSW Agriculture and the Meat Industry Authority.

Information about GM crops around the world, statistical information and gene technology regulation can be found in a brochure entitled, **GM feed and the livestock**

**industry – Gene Technology in agriculture**, produced by Meat & Livestock Australia, see:

<https://www.mla.com.au/uploads/templates/publicationspdf/1740366026.pdf>

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## 7. PRODUCTS UNDER SCRUTINY

More information and specifics on the two GM canola applications can be obtained by visiting the OGTR website:

Monsanto Australia application DIR 020/2002

<http://www.ogtr.gov.au/rtf/ir/dir020.rtf>

Bayer CropScience application DIR 021/2002

<http://www.ogtr.gov.au/rtf/ir/dir021.rtf>

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## 8. GENERAL AND OTHER REFERENCES:

More information can be obtained at the following:

Agriculture, Fisheries and Forestry – Australia (AFFA): A comprehensive list of countries and their regulatory schemes.

<http://www.affa.gov.au/content/output.cfm?ObjectID=3158AA5F-9953-45E0-A406CB0D0C244BBF>

Agriculture, Fisheries and Forestry - Australia (AFFA): A detailed report reviewing the testing of GM crops and food products.

<http://www.affa.gov.au/content/output.cfm?ObjectID=7DE2E28F-1913-40D5-BA711F313D07F17B>

Agrifood Awareness Australia Limited: A daily updated website which includes an easy to read booklet providing an overview of gene technology in Australia.

<http://www.afa.com.au/>

Biotechnology Australia: A series of surveys outlining public perceptions on gene technology in Australia.

[http://www.biotechnology.gov.au/content/controlfiles/display\\_details.cfm?objectid=443164A1-7F7B-410C-BD068DA14499A560](http://www.biotechnology.gov.au/content/controlfiles/display_details.cfm?objectid=443164A1-7F7B-410C-BD068DA14499A560)

Grains Research and Development Corporation (GRDC): A booklet entitled "Feeding Tomorrow's World" which provides an overview of biotechnology and the grain industry. For copies contact GRDC on (02) 6272 5525.

The papers in this series aim to provide information and promote discussion about these issues.



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