

Regulation of GM crops and factors impacting GM crop penetration in Australia

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Structure of Presentation

- Background to GM crop production
- Australian state moratoriums on GM crop cultivations
- Recent legislative changes to GM moratoriums in NSW and Victoria
- Factors affecting GM crop penetration in Australia



GM Crops at a glance

- Over 100 million hectares of GM crops currently planted worldwide.
- Most are herbicide resistant and insect resistant varieties of soy, corn and cotton.
- GM crops are grown in 21 countries, the major producers being the US, Argentina, China, Canada and Brazil.
- Countries in other parts of the world have been more hesitant in dealings with GM crops, especially European Union nations and African nations



Some Problems Facing GM Crops

- Lack of education about biotechnology
- Consumer concern about GM crops
- Anti-GM and anti-science propaganda by environmental groups
- Lack of support of the technology at a national level in some parts of the world
- Lack of political acceptance
- Legal and regulatory issues



GM Crops and Australia

- Currently three GM crops are commercially produced in Australia – cotton, canola and carnations
- Commercial GM cotton production in Australia began in 1996/1997
- Significant market penetration – this season 92% of cotton grown in NSW was a GM variety



GM Crop Regulation

- The *Gene Technology Act 2000* came into force on 21 June 2001
- National scheme for the regulation of genetically modified organisms in Australia
- The Office of the Gene Technology Regulator (OGTR) was established within the Australian Government Department of Health and Ageing
- The OGTR is responsible for assessing GM crop varieties and approving the varieties for commercial cultivation

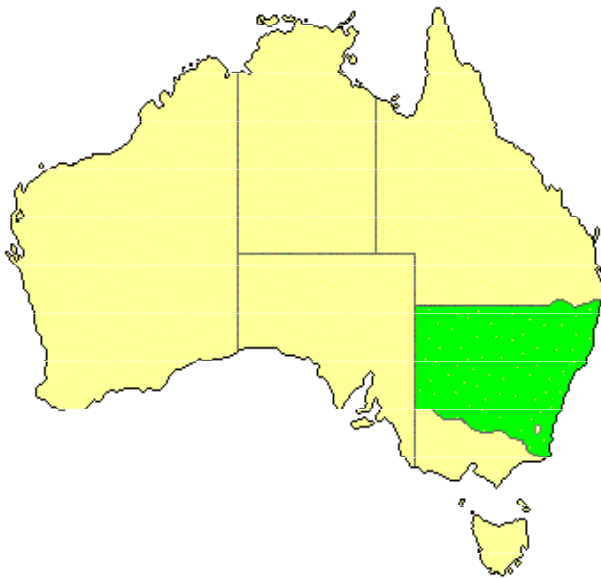


GM Canola

- In 2003 the Office of the Gene Technology Regulator (OGTR) approved two varieties of GM canola (Bayer Invigor® and Monsanto Roundup Ready®) for large scale trials and subsequent commercial release
- This approval caused most of Australia's states and territories to impose legislative moratoriums on the planting of certain GM crops within their state/territory boundaries, rendering the approval by OGTR ineffective



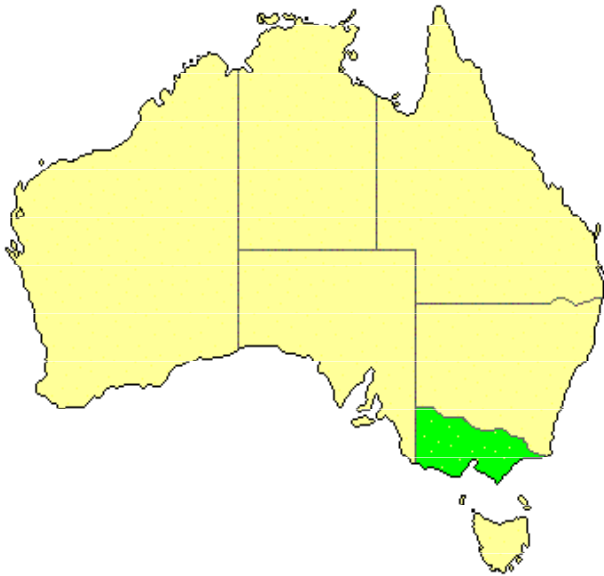
New South Wales



- Moratorium imposed on GM food crops by the *Gene Technology (GM Crop Moratorium) Act 2003*
- Non-food GM crops exempt from moratorium – ie cotton, carnations
- Small scale trials of the two approved varieties of GM canola to examine coexistence between this crop and others non-GM crops were carried out during the moratorium



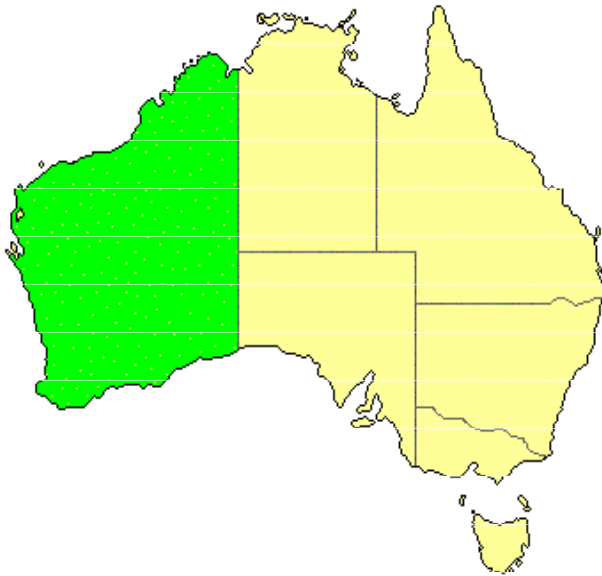
Victoria



- In 2004 the *Control of Genetically Modified Crops Act* was passed, which enabled the issuing of moratorium orders over GM crops on a case by case basis
- The commercial planting of GM canola was prohibited under the Act until 2008
- The Victorian government allowed stringently controlled research trials of GM canola on a extremely small scale



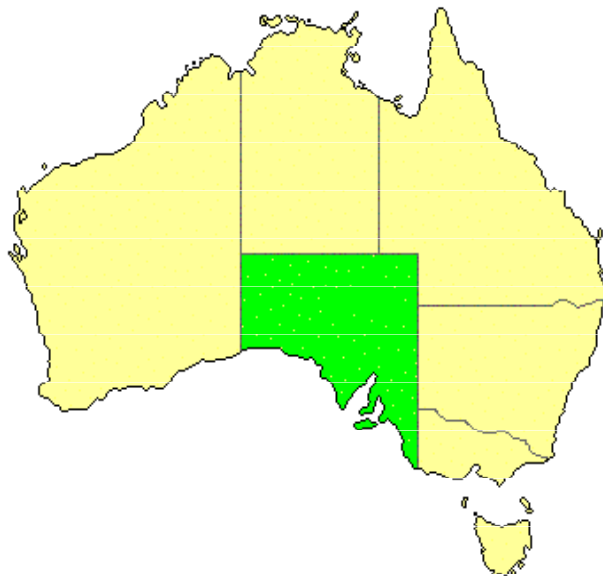
Western Australia



- The *Genetically Modified Free Crops Act 2003* was introduced to prohibit commercial growing of GM crops.
- The WA government said it was necessary to protect Western Australia's 'clean and green' image
- The WA Minister of Agriculture has the discretion to make exemptions for trials and certain GM crops
- Moratorium extended in 2008



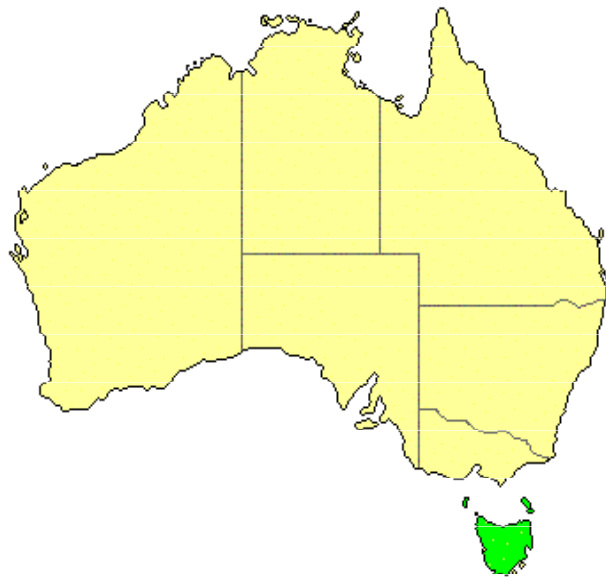
South Australia



- The *GM Crops Management Act 2004* imposes a ban on the planting GM crops in South Australia
- There are exemptions to allow field trials to continue under specific conditions
- Two defined GM-free zones have been established, namely the Eyre Peninsula and Kangaroo Island



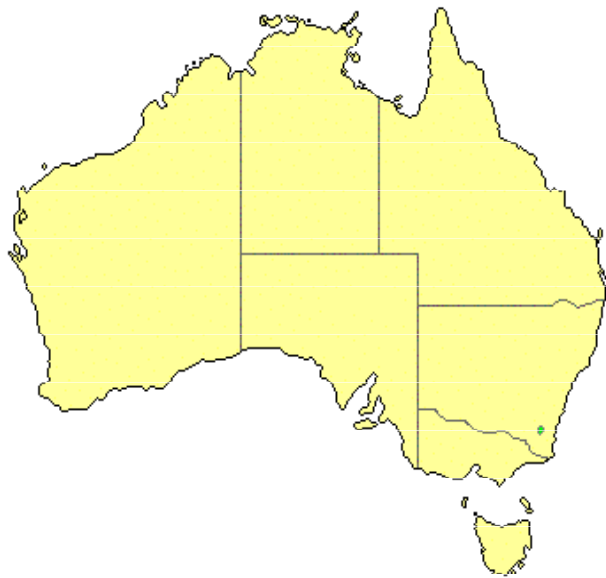
Tasmania



- Quarantine legislation was used to impose a moratorium on the planting of GM crops prior to 2004
- In 2004, the *Genetically Modified Organisms Control Act* was passed which aimed to preserve the GM free nature of crops in Tasmania
- However, the Tasmanian government is supportive of trials for GM poppies, which are funded by its poppy-growing industry



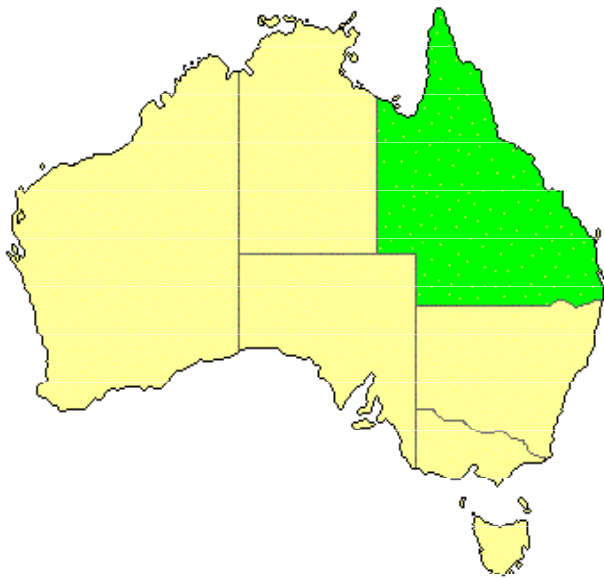
Australian Capital Territory



- The *Gene Technology (GM Crop Moratorium) Act* was passed in 2004
- The ACT Minister for Health is permitted to grant exemptions to the moratorium but the Minister's decisions are not subject to judicial review



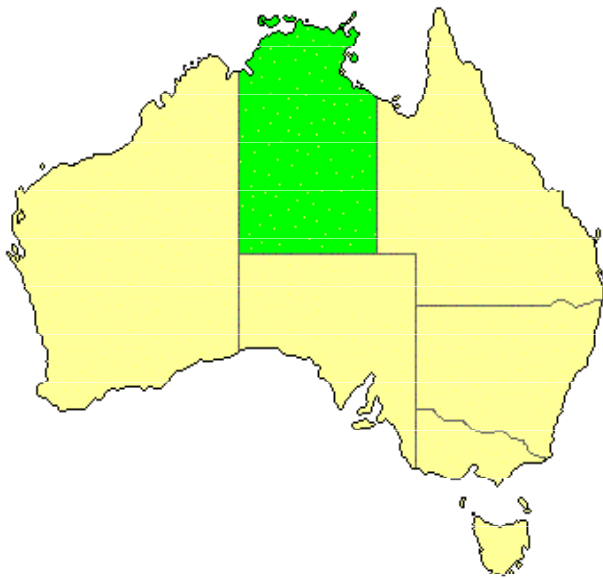
Queensland



- No moratorium or ban on the commercial production of GM crops
- Apart from being a marginal crop in southern Queensland, the climate of the rest of the state is not suited to the cultivation of canola



Northern Territory



- No moratorium or ban on the commercial production of GM crops
- The climate is not suited to the cultivation of canola



GM Food Plants / Crops

Gene Technology (GM Crop Moratorium) Act 2003

- Food Plant:

“For the purposes of this Act, a **food plant** is a species or variety of plant that the Minister is satisfied is, when grown in New South Wales, primarily grown to be used (whether or not after processing) as, or as an ingredient of, food for human consumption.”

- GM Food Plant:

“**GM food plant** means a food plant that has been genetically modified, that is, a food plant that:

- has been modified by gene technology, or
- has inherited from another plant particular traits that occurred in that other plant because of gene technology.”



End to GM Moratoriums?

- In 2007, New South Wales and Victorian Governments reviewed their GM moratoriums...



NSW – Review of Moratorium

- In July 2007, NSW Government established expert panel to review the *Gene Technology (GM Crop Moratorium) Act* 2003 and related legislation
- The panel received 1,365 written submissions, met with 31 stakeholders and reviewed published information
- The panel assessed the economic impacts of several policy options and considered issues such including:
 - segregation and coexistence
 - market access and price premiums
 - Producer / consumer choice
 - organic production
 - liability
 - investment in technology



NSW – Review of Moratorium

- The Panel concluded that:
 - concerns about the impact of GM canola on world markets and trade had largely been resolved
 - there would be minimal impact on market access or prices for the majority of Australian canola
- Recommended removal of moratorium on the cultivation of GM canola in NSW
- However, the panel also recommended that the Act be amended and continue in force.
- Restrictions remain in place regarding the commercialisation of GM crops in NSW



NSW – Review of Moratorium

- The *Gene Technology (GM Crop Moratorium) Amendment Bill 2007* (NSW) commenced on 11 January 2008
- Cultivation of GM food crops (approved by OGTR) are still prohibited in NSW unless an application for approval is successfully made to the Minister for Primary Industries by a representative of the industry concerned (e.g. canola industry) or there is an exemption
- The application will require the industry seeking to grow a specific GM food crop or class of GM food crops to satisfy the Minister that it has the capacity to manage the commercial cultivation of the crop



Application Criteria - NSW

- Before granting an application the Minister must be satisfied that the industry:
 - has adequately identified the requirements of key domestic and international markets for the GM food crop (ie will the GM variety sell?)
 - has identified the levels for the accidental or unintended presence of GM traits in food crops acceptable those markets (ie what the levels of GM crops are permitted in a non-GM food product?)
 - has or will have supply chain management processes in place to adequately address these requirements, such as segregation, if required
 - has obtained or can obtain any approvals required by the law of the key domestic or international markets relating to the importation of GM food crops
 - meets any other criteria prescribed by the regulations.



Application Procedure - NSW

- Procedure for the approval of commercial cultivation of a GM food crop in NSW (e.g. canola):
 - A representative of the NSW canola industry makes an application to the Minister
 - Minister refers application to an Expert Committee
 - Expert Committee has 28 days to provide advice to the Minister as to whether or not the application meets the specified criteria (set out in previous slide)
 - The Minister will determine whether or not to approve the application.



Exemption from Act - NSW

- The Minister has the discretion to allow GM food crops which have not been approved in NSW to be cultivated for use in experiments
- Such GM crops must be approved by OGTR
- The exemption can be subject to conditions, such as monitoring, storage, handling and restricted to a specified area



Summary: NSW Legislation

- Commercial cultivation of GM food crops is prohibited unless approval is given
- Approval is industry based rather than crop or variety based
- Approval takes into account the requirements of domestic and foreign markets and the trade implications of the commercial production of the GM crop
- Exemption from approval for crops grown for experimental use



Victoria – Recent Studies

- In May 2007, the Victorian Government established its own independent panel to assess the economic impact on Victoria of the GM food crop moratorium under the *Control of Genetically Modified Crops Act 2004 (Vic)*
- The review was required to consider the economic impact of the moratorium on Victoria and to make recommendations on the retention or abolition of the moratorium on GM food crops



Victoria – Recent Studies

- ACIL Tasman was commissioned to conduct a economic impact assessment on the moratorium entitled *The economic impact of the regulation of GM canola in Victoria*
- The review panel also produced a report entitled *Review of the moratorium on genetically modified canola in Victoria*, which became publicly available in December 2007



Victoria – Recent Studies

- The ACIL Tasman Study concluded:
 - The economic losses due to the moratorium from failing to take advantage of the direct benefits of GM canola cultivation significantly exceeded the profits that some have argued would be made by remaining GM free
 - The increasing prevalence of GM canola on world markets reduced the premiums for certified non-GM canola
 - The total cost of the moratorium for Victoria was estimated at between \$40 and 65 million. The cost of an extension for a further 8 years was expected to cost between \$110 and \$115 million.
 - The cost of segregation would be low



Victoria – Recent Studies

- The Victorian review panel finding supported the ACIL Tasman study
- The panel found:
 - Australia's canola yields had declined, while yields in GM growing nations such as Canada had increased
 - No price advantage for non-GM canola due to demand for canola for non-food uses and relaxation on import restrictions by importers
 - No imminent market risks for conventional canola or other cereal crops such as wheat and barley



Victoria – Legislative Changes

- The report recommendations were accepted by the Victorian Government
- The moratorium on GM canola under the *Control of Genetically Modified Crops Act* has lapsed in February 2008
- The Act still remains in force and potentially will allow for future moratoriums

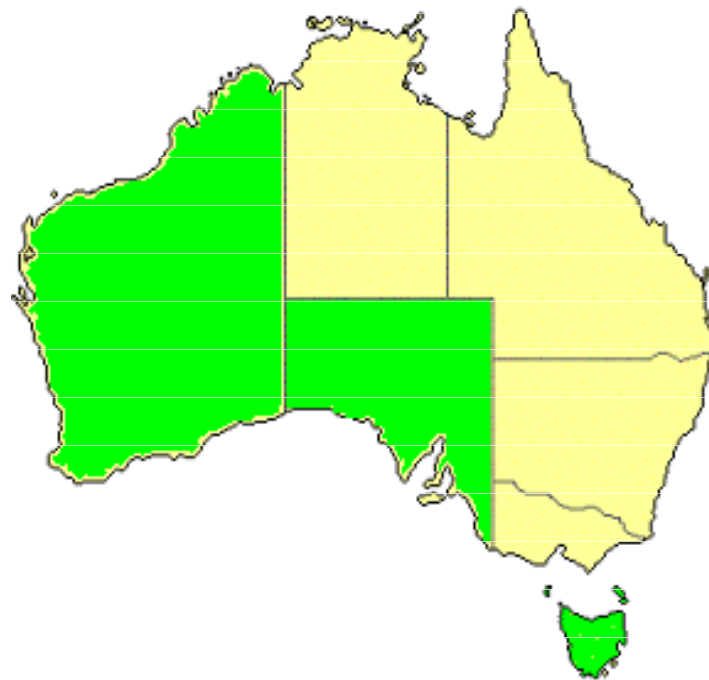


NSW v Victoria

- NSW – GM crops approved by the OGTR for commercial cultivation are banned in NSW unless approval has been granted by the NSW Minister for Primary Industries
- Victoria – GM crops approved by the OGTR for commercial cultivation may immediately be grown, unless an order prohibiting their cultivation in Victoria is made by the state government



Remaining GM Moratoriums



- Moratoriums on the commercial cultivation of GM food crops remain in force in Western Australia, South Australia and Tasmania
- Western Australia and South Australia are Australia's highest and third highest grain producing states



Developments in WA

- The WA government's GM Industry Reference Group believes the benefits of GM crops are outweighed by the risks including:
 - loss of current market premiums
 - potential loss of markets
 - inability to segregate crops
 - increased on-farm costs.



Developments in WA

- Western Australian Agriculture and Food Minister Kim Chance has stated
“After much discussion about the introduction of GM technology, I’m not aware of any compelling reasons to justify removing the moratorium for food crops in WA.”
- Wants to remain “Clean and Green”
- In 2008, the moratorium in Western Australia was extended for a further 4 years.



Developments in SA

- In early February 2008 the South Australian government announced its intention to continue the moratorium on growing GM crops
- The Premier, Mike Rann, stated that the government decided to remain GM-free to help maintain the state's “clean and green image”
- The decision was contrary to the recommendations of the GM Crops Advisory Committee, convened by the state government



Developments in Tasmania

- An investigation into the use of gene technologies in agriculture is currently underway by a committee chaired by the Primary Industries Minister, David Llewellyn,
- The investigation:
 - will involve public hearings
 - Consider developments in GM crops, public attitudes and the impact of GM crop cultivation on Tasmania's image and marketing



GM Canola Cultivation

- The Australian Oilseeds Federation anticipates that up to 14,000 hectares of GM canola will be grown in NSW and Victoria this season
- This represents up to 2.1% of 656,000 hectares of canola planted in NSW and Victoria in the 2006-2007 growing season



Factors Affecting GM Penetration

- Economic concerns
- Public opinion / acceptance
- Environmental concerns



Economic concerns

- The major concerns that exist with GM canola are economic, such as:
 - Will major trading partners accept GM canola?
 - Will prices of Australian canola decrease because of the introduction of GM canola?
 - If there is a decrease in price, will yield improvements overcome this decrease?
- No definite answer at this stage, but the projections appear positive



The Canadian Experience

- Canada is the major global canola producer
- Early adopter of GM canola (1997)
- Currently 80% of Canadian canola is GM
- Benefits observed by Canadian growers:
 - Up to 10% yield increase
 - Less herbicide use
 - Lower fuel costs
 - Increased net return of C\$5.80-\$10.60 per acre



The Canadian Experience

- Despite 80% of its canola being GM, Canada remains the world's leading canola exporter
- Based on the Canadian experience a loss of market due to introduction of GM canola is unlikely



The GM Canola Test

- If successful, GM canola cultivation in NSW and Victoria is likely to pave the way for the introduction of other GM crops and increase investment in the Australian agri-biotech sector
- If the GM canola does not produce an economic benefit, it is likely to delay the commercial cultivation of other GM crops



Public Opinion / Acceptance

- A significant amount of concern about GM crops/food exists in Australia
- Australian consumers believe that the risks of GM food outweigh the benefits
- Consumer concern about GM food must be addressed, if the commercial production of GM crops is to expand in Australia



Public Opinion / Acceptance

- A major problem for the agri-biotech sector is the strong opposition from environmental and anti-GM groups and organisations
- Such groups have in the past been more effective at putting out a negative message about GM crops than the agri-biotech sector has been at putting out positive messages



Environmental Concerns

- Concerns from conventional/organic canola growers that GM canola may cross-pollinate their crops (or that commingling with GM canola may occur during shipping)
- The Australian grains industry has stated that it believes that it can ensure the effective segregation of GM canola from conventional or organic varieties
- This will be achieved by industry protocols, processes and codes of practice and minimum buffer zones between GM and non-GM varieties



Summary

- Victoria and NSW have approved GM canola cultivation
- GM canola cultivation has commenced in Victoria and NSW
- The success of GM canola, especially with respect to the economic benefits and effectiveness of segregation, will have a major impact on the penetration of GM crops in Australia



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