



Submission to the NSW Government
Independent Review of the
Gene Technology (GM Crop Moratorium) Act 2003

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Executive Summary

ACPFPG regards the Gene Technology (GM Crop Moratorium) Act 2003 as no longer necessary.

The adoption of GM crops world-wide has continued to increase at around 12% each year. Since the NSW moratorium was introduced, the rest of the world has moved on and shown overwhelming support for GM crops. In our view Australian producers are at risk of being left behind in the international marketplace because of the restrictions imposed by GM moratoria around the country.

Over the period of the moratorium, Australian canola (rapeseed) production has fallen behind Canada where GM varieties dominate.

Over the past few years there have been several detailed studies of market impacts including a recent study that concluded that "market access issues are only part of the consideration. These should be weighed against the agronomic and environmental benefits and the costs associated with keeping GM and non-GM separate in the handling and storage process".

We would like State Government policy to be one that promotes science generally. The current regulations disallowing growth of GM crops provides a perception that the Government does not support Science.

Australia is a small part of the international agricultural production scene. The large international companies focus their work largely on maize and soybean where there is a large seed business. Even for canola, Australia is seen as a relatively small market. Therefore, action and engagement from here is likely to be critical. The moratorium has provided discouragement for international collaboration.



International background

The current generation of GM traits has focused on traits that help reduce production costs. The international scene is dominated by herbicide tolerance; built largely around Roundup, and insect tolerance; based on a series of BT genes. Herbicide tolerance has been particularly important in soybean, cotton and canola. The insect tolerance genes are widely used in maize and cotton with BT rice recently approved for commercial production in Iran and likely to be released soon in China.

Other transgenes that have proved important for specific crops are genes for virus resistance in papaya and cucurbits.

Although production traits have dominated there have also been several releases of GM crops with altered quality characteristics such as the high laurate canola and the modified flower colour in carnations. The first GM food crop also had altered quality characteristics; this was the FlavrSavr tomato with enhanced storage life.

The engineering of a male sterility system in canola has been important in the development of several high yielding hybrid varieties.

The list of species for which GM food crops are being grown commercially at present includes rice, canola, maize, soybean, squash, papaya, sugarbeet, cotton (cotton seed oil is approved for human consumption) potato and tomato.

A large array of new transgenic lines is in advanced stages of evaluation. One of the most exciting is new drought tolerant maize lines from Monsanto and the enhanced nitrogen use efficiency from Arcadia. Field evaluation of GM crops in Australia has been underway for many years with the first release occurring in the mid 1980s. In Australia we currently have field trials for drought tolerant wheat based on genes from BASF at DPI NSW, wheat with altered quality characteristics to improve starch composition at CSIRO, multiple insect tolerance genes in cotton, herbicide tolerant Indian mustard and canola, sugarcane modified for enhanced drought tolerance and increased nitrogen use efficiency and Torrenia with altered flower colour.

In the past there have been field trials of a wide range of plant species for a variety of genes; these include peas, clover, lupins, wheat, barley, canola, Indian mustard, cotton, papaya, pineapples, potatoes, tobacco, sugarcane, grapevine, roses, carnations and poppy.

The adoption of GM crops world-wide has continued to increase at around 12% each year. In 2005 there were over 100 million ha of GM crops grown worldwide or over double the area sown in 2000 (<http://www.isaaa.org/>). Therefore, since the NSW moratorium was introduced, the rest of the world has moved on and shown overwhelming support for GM crops. In our view Australian producers are at risk of being left behind in the international marketplace because of the restrictions imposed by GM moratoria around the country.



GM crops are now used, without incident, by over 10 million farmers in 22 countries around the world. In North America the proportion of the soybean crop that is GM has risen to over 90%, the maize crop is 75% GM and canola is 70% GM. The GM technology has also been widely adopted in developing countries in Asia and Africa, where pest tolerant crops are greatly improving the security of food supply and hence political security. The most rapid increase over the past few years has been in India and China. Even Europe, where the main opposition to GM crops originated, GM crops are now grown in Germany, France, Spain, Portugal, Czech Republic and Slovakia.

Despite assertions to the contrary, we have seen no data that links the adoption of GM with a decrease in exports or a decrease in price. Further, there have been no credible reports of environmental or human health dangers with the technology.

However, there have been clearly demonstrated benefits to human health and the environment through adoption of GM crops. An assessment of the reduction in insecticide use in Australia found that where 135 kg a.i./ha was used on conventional cotton only 28 kg a.i./ha was required for BT lines. This represents a reduction of almost 80% (Knox et al 2006). Similarly, the introduction of Roundup Ready crops in the US and Canada has not increased levels of herbicide applications but has led to a dramatic expansion in zero till with resultant big reduction in erosion and soil degradation. GM canola has also proved important in the clean up of weedy fields (Beckie et al 2006)

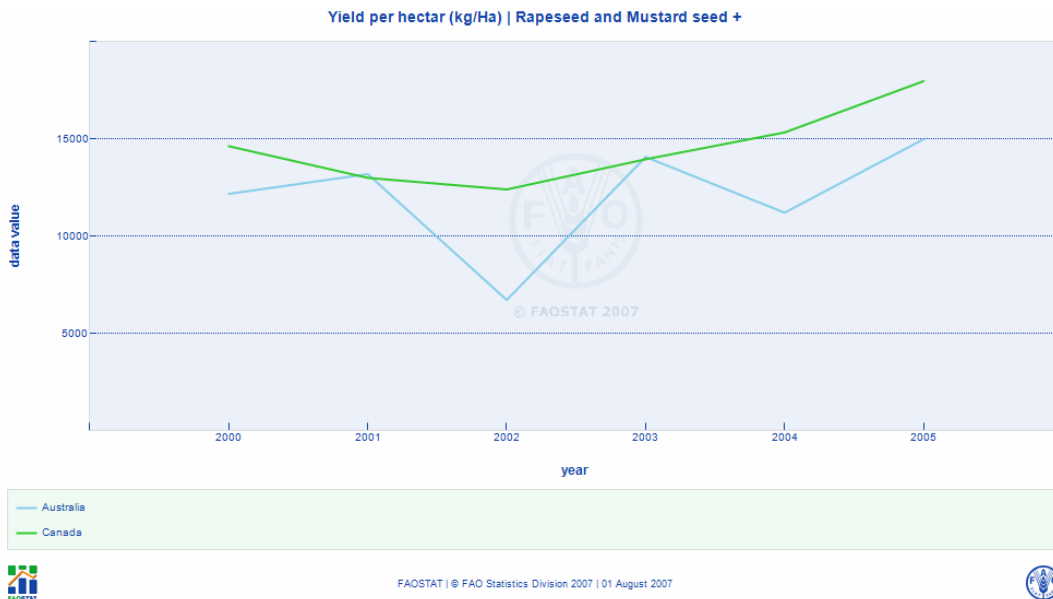
An analysis of the potential economic impact of Roundup resistance Canola in Western Australia concluded that the value of GM Canola "is positive in 70% of all scenarios investigated" with a benefit to growers of over \$10 per ha per year in 40% of the scenarios examined (Monjardino et al 2005).

With respect to market implications of GM canola a recent ABARE report noted that "GM canola is generally accepted as readily as conventional canola and is priced at very similar levels" (Foster and French, 2007).

Impact

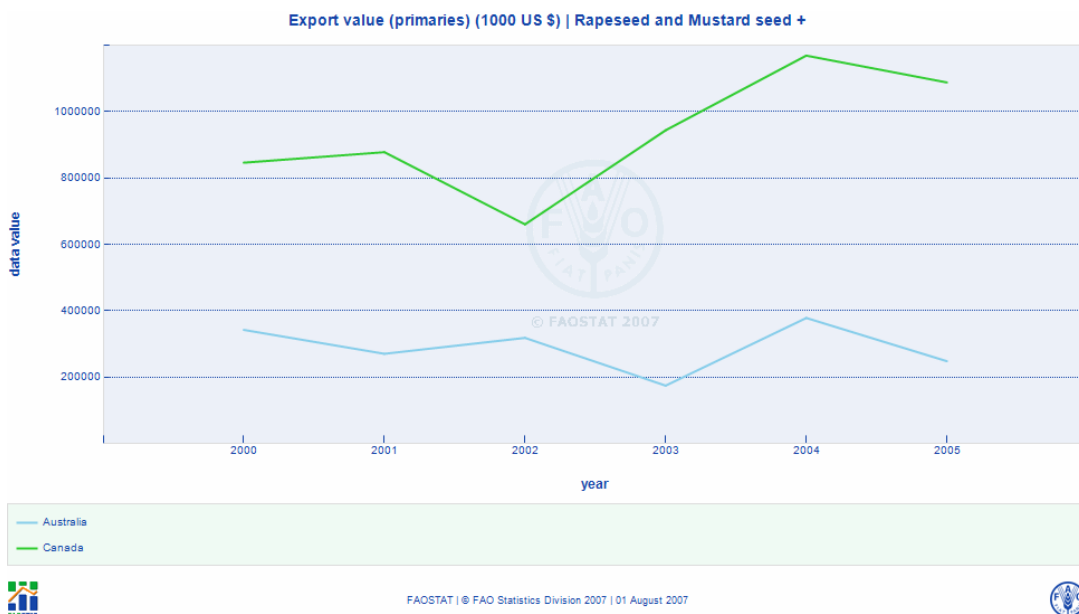
The objective of the moratorium was to increase exports and value for the NSW grains industry. However, as the graph below shows, over the period of the moratorium, Australian canola (rapeseed) production has fallen behind Canada where GM varieties dominate.





Source: <http://faostat.fao.org/>

An even more significant downturn can be seen in the value of Australian exports of canola relative to Canada. While the value of the Canadian crop has grown, the Australia crop has remained unchanged over the past five years. This again suggests that the inability of Australian producers to access the GM varieties has reduced their international competitiveness.



Source: <http://faostat.fao.org/>

GM technology underpins most of modern biological research. Without it we would have been unable to achieve many of the major advances in medical, agricultural or environmental sciences. While GM crops are not the only means for delivery of research outcomes from GM science, it does represent a significant advance and

cleanest method for application. The benefits we have seen for cotton producers in Australia, and maize and soybean producers overseas, shows that GM technology can significantly reduce production costs.

The competitiveness of our farming industries have been based on the adoption of new technologies as they become available. Where growers have access to GM crops, the rates of adoption exceed anything we have previously seen in agriculture. The risks associated with turning our backs on a major modern technology, are that our production systems will slowly loose in competitiveness.

Segregation

Encouraging or ensuring segregation for all crops whether GM or not could assist in Australia retaining a price premium for its products. Australia already has a good system for classifying varieties and retaining their identity through the value chain and has the opportunity to become a world leader in food traceability. This would ensure a price premium for all quality products.

State legislation should ensure that adequate segregation of non-GM crops occurs if non-GM is seen to have a market and a price premium. There have been several studies of the costs of segregation and identity preservation in a mixed production system of GM and non-Gm crops. The studies suggest that the costs can be between 5 and 15% (Foster 2001 loc cit). However, it should be noted that in Canada, 95% of the canola crop is GM in 2005 (Brookes and Barfoot, 2006) but no segregation occurs and hence it is all classified as GM whether it is or not.

Should the Moratorium remain in place?

The moratorium is no longer appropriate and should be abolished. We would like State Government policy to be one that promotes science generally. The current regulations disallowing growth of GM crops provides a perception that the Government does not support Science.

As noted above, the moratorium has added greatly to community confusion and discomfort about the regulatory framework. The introduction of a new regulatory tier by the State after establishment of the Federal regulatory system, has done little to boost community confidence in the regulatory framework in this country.

Regulatory Safeguards

There are adequate Federal laws regulating human health and environmental safety issues related to GM crops through the Office of the Gene Technology Regulator. The Office of the Gene Technology Regulator (OGTR) has now issued 71 licenses for release of GMOs and the previous regulatory body (GMAC) issued over 150 licenses. However, GM technology underpins most aspects of modern biological research. There are over 1,500 approved facilities for work on GMOs in Australia in over 400 research organisations and there are several thousand research projects that have been registered (<http://www.ogtr.gov.au/>). Therefore, this is clearly an area of enormous activity. The Australian regulatory system is well regarded internationally and is generally viewed as amongst the most stringent in the world.



The NSW moratorium was introduced to deal with perceived market problems since health and environmental safety issues were already adequately considered in the OGTR risk assessment. Specifically, the moratorium was used to halt the release of GM canola. At the time of the introduction of the moratorium, little market information was available concerning the impact of GM crops and the need or costs of segregation. Over the past few years there have been several detailed studies of market impacts most notably ABARE report on "Market acceptance of GM Canola" (Foster and French 2007). Foster and French (2007) concluded that "GM canola is generally accepted as readily as conventional canola and is priced at very similar levels". They also commented that "market access issues are only part of the consideration. These should be weighed against the agronomic and environmental benefits and the costs associated with keeping GM and non-GM separate in the handling and storage process". In a further report Foster (2006) concluded "If all the identity preservation costs were attributed to non-GM canola producers, the estimated additional cost is around \$14.48 for every tonne of non-GM canola produced, equivalent to around 5 per cent of the average farm gate price for canola". However, it should also be remembered that Canada does not segregate canola but has still be able to grow their market share.



Risk Management

Our position is that GM crops do not present a significant risk given the degree of Federal regulatory scrutiny. Consequently, we see not benefits to the community resulting from the current moratorium. We believe the current restrictions deny the community access to the demonstrable environment benefits of GM technology and are leading to negative impacts on farm viability and sustainability.



GM crops are increasing and most countries (including Australia) now have thresholds for the adventitious presence of GM. The moratorium adds little value to the Federal regulatory framework. Indeed it undermines community confidence in the OGTR.

Co-existence strategies

There are adequate technologies and frameworks to allow satisfactory co-existence. Note report from ABARE on "GM Grains in Australia: Identity Preservation" (Foster 2006) which deals in detail with this issue.

International Collaboration

Despite the extensive activity in Australia, we are still only a small part of the world scene. For example, Monsanto spends around \$600 million annually on research with around 80% of this on GM technology; they spend over \$40 million per annum on drought tolerance in maize alone. Syngenta spend almost \$650 million of plant research and around \$250 million of that is on GM crops.

The scale of this commercial research effort means that much of the technology is owned or controlled by the commercial sector. There is also substantial activity in the public sector but most public sector organisations also follow an aggressive

patenting technology. For some key technologies, such as transformation itself, they are a large and complex patenting scene that needs to be considered. However, the key objective of patenting technology is to gain some commercial advantage. In most cases the holders of patents are willing, and in many cases keen, to see their technology licensed out to as many groups as possible in order to maximise their financial returns. Even amongst the major multinationals involved in this area, there is extensive cross licensing. Consequently, it is important that we engage the technology owners and seek opportunities to collaborate.

It should also be noted that Australia is a small part of the international agricultural production scene. The large companies focus their work largely on maize and soybean where there is a large seed business. Even for canola, Australia is seen as a relatively small market. Therefore, action and engagement from here is likely to be critical. The moratorium has provided discouragement for international collaboration.



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