

# Agricultural Biotechnology Council of Australia



## GM crops and the marketplace

**Two herbicide tolerant genetically modified (GM) canola varieties were approved by the Office of the Gene Technology Regulator (OGTR) in 2003. Concerns about the market impact of GM canola led to moratoria being imposed by some state governments on the commercial production of GM canola varieties.**

Concerns about the market impact of GM canola can be broadly summarised as:

- 1 Australia would lose canola markets by opting to adopt GM varieties.
- 2 Price premiums for Australia's non-GM canola would be lost.
- 3 Other Australian crops, such as wheat and barley, could see their markets jeopardised because of the unintended presence of GM canola in their shipments.

These concerns were taken seriously by the Australian grains industry, and the result is that following the commercialisation of GM canola, farmers continue to have a choice in the crops they grow in their farming system — be that GM or non-GM canola or other crops entirely.

The increasing global uptake of GM crops and a number of reports addressing various market access issues produced by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) also suggest that GM crops, including canola, are finding ready markets globally.

### Governments, GM canola and markets

The human health and environmental safety of GM crops is the responsibility of the OGTR. There is however, provision in the Commonwealth legislation for state and territory governments to consider the market and trade impacts of GM crops and implement policies as they see fit. As a result, five state governments and the Australian Capital Territory legislated to ban the cultivation of GM canola because of market and trade issues.

In 2007–08 the New South Wales (NSW), Victorian, South Australian (SA) and Tasmanian state governments reviewed their moratoria on GM crops. The NSW, Victorian and Tasmanian governments established independent review committees to receive public submissions and review evidence, while in SA submissions were referred to the existing GM Crop Advisory Committee for its independent assessment. Final reports and recommendations were referred to the relevant agriculture minister.

The reports produced by the NSW, Victorian and SA committees found strong evidence that the introduction of GM canola would have minimal impact on market access or prices for the majority of Australian canola and therefore recommended the moratoria be lifted (with the exception of Kangaroo Island in SA).

The Tasmanian Joint Select Committee recommended that the ban on the commercial production of GM food crops in the state be extended and reviewed after five years. The main reason for the recommendation was to allow Tasmania to stay 'GMO free' in order to gain a market advantage.

As a result of government responses to these reviews, farmers were able to grow GM canola commercially for the first time in NSW and Victoria in 2008. However, the South Australian and Tasmanian governments elected to extend their bans.

**In Western Australia (WA)**, The *Genetically Modified Crops Free Area Act 2003* is in place, however, in 2008 two exemptions were granted. One was for the commercial cultivation of GM cotton in the Ord River Irrigation Areas and the other was for small-scale commercial GM canola trials in the state. The full commercial release of GM canola in Western Australia followed in 2010.

## Industry preparedness

In order to address concerns about GM canola in the grain supply chain, and to provide information to the Government Reviews, the Australian grains industry released a report endorsed by key grains industry organisations describing the industry's capacity to use GM canola and deliver market choice.

In the report, titled *Delivering market choice with GM canola*, the grains industry recognised that choice must be a priority across the supply chain and that all customers — from farmers to consumers — must be able to use or access the products of their choice.

The report outlined and evaluated the grain industry's supply chain protocols and processes, the technical principles and practices, and the requirements of the marketplace, and the industry agreed that the key steps for commercialisation of approved GM canola had been met.

With this report, the grains industry urged governments to recognise the grains industry's ability and commitment, and to support the commercialisation of approved GM canola in Australia.

## The case of canola

According to ABARES, Canada dominates the world canola export trade, with a market share in excess of 70 per cent annually. Australia represents approximately 20 per cent of the canola export market. While more than 85 per cent of Canada's canola production is comprised of GM varieties, virtually all of the country's export canola is considered to be GM, because no segregation of GM and non-GM occurs. This did not stop its exports reaching record levels in 2006.

According to the Canola Council of Canada, about 85 per cent of Canada's canola is exported. The biggest buyer of canola oil and meal is the United States. For raw seed, the most important destinations are Japan and Mexico. Other important markets are China and India.

According to ABARES, in the first decade of Canada's GM canola production, Japan was the main importer of GM canola, taking 42 per cent of the global imports in the three years to 2005–06. Further, in the traditional import markets for canola — Japan, Mexico, China, Pakistan and Bangladesh — GM canola is generally accepted as readily as conventional canola and is priced at very similar levels. Canada did lose access to the European Union (EU) market for its canola seed, but it found ready markets for its increased canola supplies elsewhere, and it continues to supply canola oil to the EU.

ABARES states that Australia's advantage of being able to supply non-GM canola to the EU market is likely to disappear as further GM canola varieties are approved for import. Five herbicide tolerant GM canola varieties are approved for import into the EU and use as food, feed and/or industrial purposes. Four were approved or renewed in 2007, and one was renewed in 2009.

Domestically, almost 100 per cent of Australia's cotton crop is GM and approximately 10 per cent of Australia's canola crop consisted of GM canola in 2011. Imported soybean products, used in animal feed rations, are also GM. ABARES estimated that, in total, 487 200 tonnes of GM material, by weight, was used in animal feed in Australia in 2006–07. This represented approximately five per cent of all feed grains by weight used in that year, with proportions varying across the livestock industries depending on the feed mix used. This is likely to have increased with the commercial planting of GM canola from 2008.

## On price premiums

In 2007, an ABARES report stated there is 'some very limited evidence of price premiums for organic and certified GM-free canola' however markets for these canola types are still very much small niches.

The report concluded that, 'The best prospect for the development of more widespread price premiums for non-GM canola is through the reduction in export availabilities of non-GM canola arising from the commercialisation of GM canola in Australia.'

Comparisons between Australian and Canadian domestic prices have been used in the past to suggest that there is a growing price premium for Australia's non-GM canola in world markets. However, ABARES states that based on world import data, GM canola and non-GM canola are sold at very similar prices in the major canola markets across the globe.

An ABARES conference paper from 2010 stated that:

- For the seven years following the commercial release of GM canola in Canada, prices for Australian and Canadian canola were tracking closely. Since 2003, this gap has grown to favour Australia. One explanation for this emerging gap is the improvement in oil content of Australian canola.
- There is little evidence of Australian canola earning price premiums in the European Union market because of its non-GM status.
- Cash prices on offer for GM and non-GM canola by the main grain marketers in Australia were monitored between November and December 2009 in New South Wales, Victoria and Western Australia. The premiums for non-GM canola over this period ranged from 0 to 3 per cent. It is too early to conclude whether these price premiums will persist into the future.

Where it can be shown that a premium exists for a non-GM crop, farmers need to weigh this up against the benefits offered by the particular GM crop — for example, better weed control or reduced inputs. Also, farmers need to consider the size and consistency of a potential niche market in making such business decisions.

## Unintended or adventitious presence

According to the Australian Seed Federation (ASF), the unintentional mixing of trace amounts of seed from one plant variety with another variety is commonly referred to as 'adventitious presence' (AP) or 'unintended presence' (UP). Adventitious presence has economic implications in relation to market access, contract specifications and consumer preferences.

Unintended materials in an agricultural context includes things such as weed seeds, seeds from other crops, dirt, rodent faeces, insects or foreign materials such as stones, bits of wood or plastic. Thresholds for AP are an everyday reality in agriculture. Low levels of varietal impurities are an inherent problem in seed and grain production, and this has clearly been recognised by industry groups and Australian and international regulatory authorities. As a result practical levels or thresholds have been developed for AP.

Thresholds set at the commodity level are designed to meet end-product requirements such as customer expectations or regulated labelling requirements. The Australian Seed Federation (ASF) has established a non-GM canola tolerance threshold for the adventitious presence of 0.5 per cent GM seed in non-GM planting seed.

A non-GM canola standard with an AP tolerance of 0.9 per cent (that is, equivalent to the European Union standard for AP) has been developed by the Australian Oilseeds Federation in order to satisfy non-GM market opportunities.

The possibility of the unintended presence of GM canola jeopardising exports of commodities such as wheat and barley is not apparent when looking to other GM crop producing countries according to ABARES. For example, there is no evidence to suggest that GM canola content adversely affected Canada's barley or wheat export markets.

## Identity preservation

Identity preservation is defined by ABARES as ‘the process by which a crop is grown, handled, delivered and processed under controlled conditions to assure the customer that the crop has maintained its unique identity from seed producer to end user.’

ABARES has developed a framework for estimating identity preservation costs and establishing who bears those costs in relation to the introduction of GM grain crops into Australia. The report concludes that while there will be costs involved in managing GM grains through the grain supply chain such costs appear ‘modest and manageable.’ The costs vary according to factors such as seeding rates, the mix of grains produced, climate and the characteristics of the receival site.

On average, 85 per cent of these 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.

## Coexistence

According to the Council for Agriculture Science and Technology (CAST), coexistence at the farm level describes ‘farmers growing different types of crops while recognising that AP will occur in each, adopting reasonable practices of good stewardship and husbandry to minimise AP, and working in a neighbourly fashion with adjoining farmers’.

Examples of conventional commodities that coexist, have AP thresholds and meet global market requirements include:

- malting barley and feed barley
- corn varieties grown for food, feed and industrial use (starch)
- pasta wheats and bread wheats.

The ability for GM and non-GM crops to coexist in agriculture has also been the subject of a number of studies in recent years. A report commissioned by the EU concluded that coexistence is possible often with little or no additional effort by farmers depending on factors such as field sizes and the crop itself.

PG Economics has also released a number of reports looking at coexistence between GM and non-GM crops. According to a research paper looking at the North American experience:

- GM crops have been, and continue to coexist with conventional and organic crops in North America (where GM crops account for the majority of plantings of important arable crops like soybeans, canola and corn), without causing any economic or marketing problems to conventional or organic growers
- claims by anti-GM groups that GM and conventional crops cannot coexist in North America are greatly exaggerated, given the on-farm experiences since 1995
- the market has developed practical, proportionate and workable coexistence measures without government intervention. These have been delivering effective coexistence since GM crops were introduced.

Farmers in Australia and around the world have proven that they can, and do, deliver choice along supply chains to meet market and consumer needs.

## Global experiences

According to the latest statistics released by the International Service for the Acquisition of Agri-biotech Applications (ISAAA), GM crops were planted across 160 million hectares in 29 countries by 16.7 million farmers in 2011. The United States of America (USA) continues to dominate GM crop production followed by Argentina, Brazil, Canada, India, and China. The four dominant GM crops are soybean, corn, cotton and canola.

The EU is often used as a barometer of GM food and crop acceptance, so it is worth noting that in 2011, eight EU countries grew GM crops. Six of them — Spain, Portugal, Czech Republic, Poland, Slovakia and Romania grew GM corn, while two, Germany and Sweden, grew a GM potato variety developed for industrial purposes.

According to PG Economics, GM crops have resulted in net economic benefits at the farm level amounting to US\$78.4 billion since their introduction in 1996. This is coupled with environmental benefits such as a reduction of pesticide use by 438 million kilograms and significant reductions in the release of greenhouse gas emissions.

## Further information

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