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'We want to ensure that developments in biotechnology are captured for the benefit of the Australian community, industry and the environment, while safeguarding human health and ensuring environmental protection.'

What about the impact on other Australian agricultural or food products?

As with most agricultural activities, canola is produced in an open environment where there is the potential for it to impact on other agricultural activities. However, canola is largely a self-pollinating plant with some potential for outcrossing. This means that the potential gene flow from GM canola is limited to close relatives of canola growing in close proximity to the GM crop. Low levels of cross-pollination can be obtained by utilising appropriate crop management which aims to avoid outcrossing.

The low potential for gene flow has been recognised and addressed in stewardship principles developed by the grains industry.

What are the legal issues?

Some farmers will want to grow GM crops and others will want to be GM free. Possible grounds for dispute exist because of concern that the use of GM technology may impose costs on a GM free business for which it may not be compensated. Also there is potential for misdescription of traded canola through the unintentional co-mingling during storage and transport. However existing laws and systems of negotiation are adequate for dealing with such issues.

How do I find out more?

This brochure is one of a series of Biotechnology briefs on biotechnology and Australian agriculture.

More information is available in the report:

ACIL Tasman Pty Ltd and Innovation Dynamics Pty Ltd 2007, GM canola: An information package, Australian Government Department of Agriculture, Fisheries and Forestry.

Other titles in this series of Biotechnology briefs:

GM crops: Tools for insect pest and weed control

GM canola: Potential impacts on organic farming in Australia

GM grains in Australia: Identity preservation

GM oilseed crops and the Australian oilseed industry

Market acceptance of GM canola

Value of biotechnology applications to Australian agriculture

The Australian Government's National Biotechnology Strategy funded the production of these brochures and reports.

Biotechnology

GM canola:
An information
package

briefs

This brochure presents an overview of recent information on genetically modified (GM) canola. It looks at the main arguments for and against the commercial release of GM canola in Australia from a range of viewpoints - including that of farmers, producers and consumers - and investigates what the best available published information says on the subject.

Growing canola in Australia

Canola is a variety of rapeseed. ‘Canola’ was originally the trademark name of a Canadian rapeseed cultivar which offered improved quality characteristics. Today, the terms ‘canola’ and ‘rapeseed’ are sometimes used interchangeably.

Canola is a versatile plant, providing oil and meal for stockfeed. Oil from the seed has a number of applications and is found in a variety of end products, ranging from margarine and other spreads to soaps, plastics and bio-diesel. Canola is important in Australian winter crop rotations, yielding good farm returns and providing agronomic benefits such as improved soil management, pest control and yield increases in subsequent crops in the cropping rotation.

Since the first commercial plantings in Australia in the late 1960s, the area sown has increased to an annual average of one million hectares, producing up to 2.4 million tonnes of seed. In Australia, Western Australia is the largest canola producer, followed by Victoria, New South Wales and South Australia.

Australia is still a relatively small producer of canola compared with the rest of the world. The largest producers are the European Union, China and Canada. However, Australia is a significant exporter of canola seed and canola oil.

What is the current state of play with GM canola in Australia?

Today, weed resistance and pressure from diseases are threatening canola’s contribution to farming systems in Australia. GM canola can make a valuable contribution to overcoming some of these problems.

Non-GM herbicide tolerant canola currently accounts for almost 50 per cent of the Australian crop. However, triazine resistant weeds are becoming an increasing problem for growers. One option to manage this would be to introduce canola varieties that are resistant to other herbicides, providing alternative weed management regimes.

Since 2001, Australia has had a uniform, national approach to the regulation of gene technology, underpinned by the *Gene Technology Act 2000* and the Gene Technology Agreement between Commonwealth, state and territory governments. The regulation is designed for the health and safety of humans and to protect the environment by identifying and, if necessary, managing any risks posed by or as a result of gene technology.

In 2003, the Office of the Gene Technology Regulator (OGTR) approved the commercial release of two varieties of GM canola on the basis that they are as safe as conventional varieties and pose no additional risks to humans or the environment.

They are:

- InVigor® canola, which tolerates the herbicide glufosinate ammonium and has hybrid characteristics to improve yield; and
- Roundup Ready® canola which tolerates glyphosate, the active ingredient in Roundup®.

Farmers in Canada, the world’s largest exporter of canola, have been using genetically modified (GM) canola for 10 years, with no appreciable loss of market share or price.

GM canola is being grown commercially in Australia, with the first plantings in New South Wales and Victoria in 2008.

What are the technical aspects of GM technology?

GM plant breeding technology enables physiological and physical attributes to be transferred between species and varieties. Examples of potential attributes include longer shelf life, disease tolerance and enhanced quality.

GM herbicide tolerant canola is not a panacea for the problems facing crop producers. To be effective the technology needs to be used in conjunction with other wider industry innovations.

What about market acceptance?

Market acceptance of GM canola is currently mixed. Consumers appear to have some concerns about GM crops. These concerns do not appear to be translating into significant or sustained price premiums being paid for non-GM canola products.

What are the impacts of introducing GM canola to Australia?

Once farmers have access to GM canola they can adapt it to their individual cropping rotation. Australian and international evidence indicates that GM canola confers some cost, yield and gross margin advantages to growers.

Economic modeling suggests that not adopting GM canola would cost Australian farm business \$1.5 to \$5.8 billion in the period 2005 to 2015.

Can GM canola and non GM canola co-exist?

Segregation is already a routine function of the grain supply chain. This can be achieved at a relatively low cost for current international trade and market specifications. While these costs are likely to be met by non-GM canola growers, they will only incur them if there is a market premium for non-GM canola that exceeds the segregation costs.

The coexistence of GM and non-GM canola relies on good farm management practices and maintenance of machinery and crop hygiene if market specifications for GM content are to be met.

Grain processors and the manufacturing sector will determine acceptable levels of adventitious presence of approved GM canola in non-GM canola.

Accurate testing for the presence of GM traits is important for the coexistence of GM and non-GM grains. Testing for the presence and level of novel DNA in non-GM canola can be done in a number of ways and at different points along the supply chain to deliver market choice to consumers and confidence to international markets.

