



Australian Government
Department of Agriculture,
Fisheries and Forestry

What are the challenges and opportunities for the Australian oilseed industry?

Challenges that the industry may need to face, include:

- the impact of climate change, especially drought
- new varieties of palm and soybeans, providing oils which are widely and cheaply available and are of similar quality to the more expensive Australian canola oil.

Current opportunities include the chance to:

- further benefit the wheat industry by increasing the use of oilseed crops in rotation cycles
- supply more local oilseed meal to the growing stockfeed industry
- develop stable oils for frying that could compete with palm and soybean imports
- develop value-added oils such as health-giving long-chain omega-3 fatty acids
- create a niche market for oilseed crops containing omega-3 oils
- produce high volumes of oils for biodiesel production.

How do I find out more?

This brochure is one in a series of Biotechnology briefs presenting summaries of key reports on biotechnology and Australian agriculture.

More information is available in the report:

Holtzapffel R., Johnson H. and Mewett O. 2007, GM oilseed crops and the Australian oilseed industry, Australian Government Bureau of Rural Sciences, Canberra.

Other titles in this series?

Biotechnology briefs: GM grains in Australia - Identity preservation

Biotechnology briefs: Market acceptance of GM canola

Biotechnology briefs: GM canola - Potential impacts on organic farming in Australia

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



Photo courtesy of CSIRO

How can I get copies?

For hard copies of these and other DAFF publications please email: agbiotech@daff.gov.au

Visit the Australian Government Department of Agriculture, Fisheries and Forestry website for regular updates and information on agricultural biotechnology:

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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.'

Biotechnology

GM oilseed crops and the Australian oilseed industry

briefs

International competition in the oilseed market is very strong and influences the returns for our canola exports. Currently genetically modified (GM) oilseeds are being grown overseas at an increasing rate, but in Australia only GM cotton is grown commercially. Because competitor countries are growing GM oilseed crops widely, many people are predicting that the Australian industry will struggle over the next 5–10 years.

Experts believe that the introduction of GM canola could enhance the competitive advantage of our oilseeds and assist the oilseed industry to remain viable and competitive in the future. It would bring a range of benefits for farmers, such as improved yields, decreased use of herbicides and improved options for weed management. Consumers too would benefit from enhanced nutritional value, for example 'healthier' fats.

What are oilseed crops?

These are crops grown for their oil, which is widely used by both consumers and industry. Australia produces between 2 and 3 million tonnes of oilseeds each year, with canola and cottonseed accounting for 92% of our total oilseed production. Peanuts, soybeans and sunflower seeds account for the remaining 8%. Cotton is primarily a fibre crop; however it is often included as an 'oilseed' as cottonseed can be crushed for oil.

What are oilseeds used for?

Oilseeds have a wide range of uses. We use vegetable oils widely for frying, in processed food and for the manufacture of margarine. Meal derived from oilseeds is an important source of protein and oil in the stockfeed industry. Oilseeds also have non-food uses, including industrial applications such as manufacture of soaps, lubricants and paint.

How important is this industry to Australian agriculture?

The gross value of oilseed production averaged \$766 million over the three years to 2005–06. This is around 7% of the total gross value of Australian grain production.

Oilseeds, in particular canola, can have an even more important role in Australian agriculture. They are used as a vital rotation crop, to increase the productivity of wheat and barley crops that follow in the cropping cycle. These oilseed crops help with disease and weed management for our main export grains.

Do we grow genetically modified oilseed in Australia?

In Australia, we are currently growing genetically modified (GM) varieties of cotton, which are both herbicide tolerant and insect resistant.

In 2003, the Gene Technology Regulator approved two varieties of GM canola for commercial release in Australia. However, a number of concerns related to marketing have meant that the main canola-producing states in Australia have put in place legislation preventing commercial plantings of GM canola.

What about overseas?

Overseas countries have approved the commercial release of a number of GM oilseed crops. For example, cotton, canola and soybean varieties are grown with herbicide tolerance and/or insect resistance. The widespread production and introduction of GM oilseed crops overseas is likely to continue.

What does this mean for the Australian oilseed industry?

Because competitor countries are growing GM oilseed crops, many people are predicting that the Australian industry will struggle over the next 5–10 years. Experts believe that one option that could assist our oilseed industry to remain viable and competitive in the future is access to GM technology.

What are farmers' experiences with GM oilseed crops?

Both farmers and the environment have benefited from the adoption of GM cotton in Australia and GM cotton, soybeans and canola overseas.

In Australia, GM insect resistant cotton led to an impressive 75% reduction in associated insecticide use in the 2004–05 growing season.

Overseas studies show net economic benefits for many farmers growing GM crops. The adoption of GM canola in Canada, for example, has led to:

- improved yields
- decreased use of herbicides
- improved options for weed management
- easier adoption of minimum and no-till cultivation practices.

Canadian growers have retained their share of the main export markets, despite the majority of their canola crop now being GM varieties.

What are the latest developments in GM oilseeds?

Australian research is developing crops that produce healthier oils. Scientists are improving the nutritional value of our oilseed crops by:

- improving the fatty acid profiles (e.g. high oleic and/or low linoleic acid levels)
- developing novel fatty acid compositions (e.g. long chain omega-3 fatty acids)

Current research overseas is investigating ways in which to produce GM oilseed crops with the following features:

- increased essential amino acid content (e.g. methionine and lysine)
- precursors of essential vitamins (e.g. Vitamin A and E)
- increased nutritional value for stockfeed (e.g. by reducing anti-nutritional compounds such as phytic acid)
- opportunities for the development of pharmaceutical and industrial products (e.g. plant-made vaccines or bioplastics).
- lower levels of compounds that cause allergic reactions.

In addition to increasing the health benefits for people and animals, new modifications will improve agronomic performance and increase profits for grain growers. The new varieties might provide:

- increased yields
- improved tolerance of environmental stress
- improved disease resistance
- more efficient nitrogen use
- increased seed size, yield and oil content
- reduced pod shatter.