

STATUS OF GM CANOLA IN AUSTRALIA

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Introduction

While there are currently no commercial genetically modified (GM) canola crops grown in Australia, a number of GM types have been field tested under planned release guidelines. The GM types evaluated include those with modified crop production traits and those with modified product quality traits.

Regulations

The Genetic Manipulation Advisory Committee (GMAC) has had the oversight of gene technology research and development in Australia. It is a non-statutory body established by the Commonwealth Government in 1987. GMAC responsibilities have included oversight of small-scale contained laboratory research, large-scale contained processes and planned releases of live GMOs into the environment. For planned releases of GMOs into the environment, GMAC has required information on the impact of the GMO on the environment, humans, livestock, agricultural crops and natural biota. However, GMAC's advice has had no legislative force.

In 1997, therefore, the Commonwealth Government announced plans to establish an Office of Gene Technology Regulator (OGTR) to oversee the biosafety of gene technology research and regulate the field release of GMOs. The legislation to allow this has passed through parliament and will become law on 21st June 2001. The OGTR will adopt similar procedures to those currently used by GMAC, but will be supported by new statutory powers.

The planned release guidelines for trialing canola in Australia currently include:

- 400 metres isolation from any other canola
- trial site and a 50 metre radius surrounding the trial to be kept free of sexually compatible weeds
- no canola to be sown on the site for the 2 years prior and 3 years after the GM canola trial
- removal of volunteer canola plants for 3 years after the GM trial
- a 15m non-transgenic canola pollen-trap buffer is to be sown around the trial and destroyed prior to seed set.

Food Safety

A new Food Standard from the Australia New Zealand Food Authority (ANZFA) regulates the sale of food and food ingredients, other than food additives and processing aids, produced using gene technology. It prohibits the sale of such foods unless they are included in the Standard and comply with any designated special

conditions. Inclusion in the Standard will be as a result of an application and safety assessment by ANZFA.

The safety for human consumption of foods produced using gene technology will be determined by an ANZFA risk-based case-by-case assessment before their release onto the market. In most cases, this will rely on a comparison of molecular, compositional and nutritional data for the food derived from gene technology with those of its unmodified counterpart, where such exists. Where no equivalence to any conventional food or food ingredient can be shown, the safety assessment would focus on composition and properties of the product as for any other non-traditional food source. Where the new food or food ingredient is intended to replace a significant part of the diet, human nutritional data are likely to be required.

Labelling/Segregation

While there will probably be some degree of identity preserved production and marketing of non-GM canola in Australia, it is unclear as to what extent the bulk of the commodity crop will be segregated into GM and non-GM. This will be influenced by the acceptance of GM products in Australian markets. If segregation occurs, additional storage costs will be involved. The necessity of a threshold for off-types to ensure successful co-existence of organic, non-GM and GM canola crops is currently under discussion.

The ANZFA GM Standard also includes guidelines for labelling of GMO foods. Labelling of food and food ingredients is required where novel DNA or protein is present in food at levels higher than 0.1%. Unpackaged GM food (e.g. fruit, vegetables) must also be labelled. Food prepared for immediate consumption (e.g. restaurants, takeaways) and highly refined foods where the refining process removes the DNA and/or protein (e.g. oils) are exempt from labelling.

GM Traits

Crop Production Traits

GM canola crop production traits evaluated under planned release in Australia include herbicide tolerance, disease resistance, hybrid systems, photoperiod insensitivity, modified plant architecture and shatter resistance. Products being developed for commercialisation include the Seedlink hybrids and Roundup Ready cultivars.

A number of anti-fungal proteins and other genes (e.g. peroxidases) are being screened for their effectiveness against the major canola diseases, blackleg and *Sclerotinia*. Effective strategies for the control of blackleg remain vital to the long term viability of the Australian industry, with breeding for resistance a key component of these strategies.

Product Quality Traits

The first GM quality type evaluated in Australia was high laurate canola. Very high oleic acid types based on elite Australian *B. napus* and *B. juncea* germplasm have been developed using gene silencing techniques. Other oilseed quality types now under development include unusual high value fatty acid types (e.g. hydroxy and epoxy fatty acids). These require higher transgene expression before they can be commercialised.

Consumer Reaction

Consumer reaction to GMOs in Australia is divided. Growers and consumers are keen to ensure they have a choice with regard to use of GMOs.

Conclusions

The Australian canola industry has seen significant growth over the last decade. This growth is likely to continue into the future, with many genetic improvements in canola resulting from the use of molecular genetic techniques to introduce new genes, modify existing ones and to provide more efficient means to identify specific combinations of genes.

Within ten years, Australian production is expected to come predominantly from GM cultivars. The first GM canola available in Australia will be the Roundup Ready[®] cultivars and SeedLink[®] hybrids. They are expected to be commercially available by 2003.