

GE in Australia **2**

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GE in the Australian environment

Genetically engineered organisms have already found their way into the Australian environment — as commercially grown crops and field trials. Almost 900 GE crop trials have been grown in Australia, whilst commercially Australia currently grows just two GE crops.

Field Trials

Termed 'experimental trials', the trials taking place in Australia are in fact grown in open air on farmland. They are thus able to contaminate both the wider environment and other farmers' fields. These GE trial crops range from grains and fruits to eucalypts.

Although field trial crops or their products (eg: seeds) are not for commercial sale in Australia, they can be exported. Whether they are sold overseas, or to develop future GE crops, field trials continue to generate profit for multinational agro-chemical companies.

Although the acreage grown in field trials is comparatively small, the living nature of GE organisms means they are an ongoing threat to the environment. Agro-chemical companies Monsanto and Bayer (formerly AventisCropscience) have already breached trial regulations and allowed GE plants to regrow after the trial period had finished.¹

You can find a map of field trials at <http://www.ogtr.gov.au/gmorecord/maps.htm>

Commercial growing

Australia is one of only a handful of countries worldwide that grow GE crops commercially. The only two crops currently allowed for commercial growing are cotton and carnations. Bt cotton is engineered to be insect resistant, Roundup Ready cotton for herbicide resistance and two types of carnation are genetically engineered for a longer vase life and to be violet.

Apart from growing GE cotton in Australia, Monsanto and Bayer have also applied for the widespread commercial release of GE canola. This represents the introduction of a major GE food crop and would thus jeopardise Australia's image as clean and green. It is also a major concern from an environmental perspective as canola is considered to be highly 'promiscuous': As such, the canola plant crosses easily with other Brassica species, in particular wild radish (a common agricultural weed), and wild turnip (a major weed in native bush).² Canola has tiny seeds and fine pollen that can contaminate not only through wind and insects, but also through human error during harvesting, transporting and storing. Segregation, to allow non-GE farmers to maintain their non-GE status, is clearly impossible.

¹ Investigation into non-compliance at past trial sites in Tasmania, Monsanto Australia Ltd and Aventis Crop Science Pty Ltd, Office of the Gene Technology Regulator, <http://www.ogtr.gov.au/publications/reports.htm>

² Management of volunteers and outcrossing in triazine-tolerant canola, Dr Christopher Preston, Adelaide University, <http://www.waite.adelaide.edu.au/CRCWMS/resources/publications/weedsupdate2.pdf>

The briefing paper *Out of Control — GE Canola in Canada* shows how the widespread contamination by GE canola in Canada has led to the use of even more toxic herbicides.³

How are GMOs regulated?

The Commonwealth Gene Technology Act came into force in June 2000. This act establishes the Office of the Gene Technology Regulator (OGTR) to oversee the introduction of genetically engineered crops. Individual states are required to pass 'mirror legislation' of this federal act for it to be implemented.

The OGTR is the federal authority responsible for regulating any 'dealings' with GMOs and falls under the Department for Health and Aged Care. 'Dealings' can include licences for contained trials, field trials or commercial planting.

This legislation places a high degree of power in the hands of the Regulator, who is able to decide the level of 'acceptable risk' and the level of precaution that should be taken. The Gene Technology Act provides for 'managing risk' rather than considering the long-term issues about whether GMOs should be released at all. It is a permissive, as opposed to a precautionary scheme, allowing for a wide range of 'dealings' with only minimal conditions.

Some of the main flaws of the legislation are the lack of public participation. For example, the public has no right to appeal the granting of a licence application, whereas companies do have the right to appeal a rejection of a licence application. Despite the establishment of a Community Consultative Committee, it is not able to input into specific licence decisions and the Regulator is under no obligation to follow its recommendations. The OGTR has broad discretionary powers and there are no systems to monitor the OGTR.

The risk assessment undertaken by the OGTR excludes a wide range of vital issues that require consideration. For example, the OGTR fails to take into account the secondary environmental and health impacts of GE crops, due to their long-term contamination of agriculture and bushland. Current scientific understanding of microbiology, ecological complexity and genetics is insufficient to define the exact consequences of these events.

Economic concerns of non-GE farmers

The Regulator's scope of assessment is, in addition, limited to only 'environmental and health' matters and therefore excludes any 'economic' concerns farmers may have about the contamination of their produce. However, the OGTR is not able to issue a licence when a GE-free zone has been designated by State governments and supported by a ministerial council approval. Under the current Commonwealth legislation, areas for non-GE crops are able to be designated only for marketing purposes and only for crops. See the *GE-free councils* section for further details on the local level. In effect, stopping the commercial release of GE canola in Australia will involve putting pressure on State governments to:

- enact legislation enabling them to create GE-free zones (for marketing purposes); and
- declare GE-free zones (ideally the whole state).

³ Orson, J. (2002) Gene stacking in herbicide tolerant oilseed rape: lessons from the North American experience. English Nature Research Report No. 443. English Nature: Peterborough.

The new law governing genetically modified organismsⁱ

Warren Kalinko, Solicitor, Environmental Defenders' Office (NSW)

Introduction

A new system for the regulation of genetically modified organisms (“GMOs”) in Australia commenced operation on 21 June 2001. The law governs the growing of genetically modified (“GM”) crops, the breeding of GM animals, experiments with GMOs and a variety of other dealings with GMOs (whether for medical, agricultural or other purposes). The regime is established by the *Gene Technology Act 2000* (Cth) (the “**Act**”) and the *Gene Technology Regulations 2001* (Cth) (the “**Regulations**”).

Part A of this article contains a description of the new system. **Part B** focuses on specific aspects of the law, including: (a) the range of dealings potentially permissible under the Act; and (b) the Regulator’s power to decide whether an activity proceeds.

Conclusions

The principal conclusions are these:

- (a) (**Range of dealings**) An extensive range of dealings are potentially permissible under the Act, including the broad release of GMOs into the environment, and the cloning of human beings (where the progeny are not genetically identical to the forbear).
- (b) (**The Regulator decides**) The Act establishes the Office of the Gene Technology Regulator (the “**Regulator**”), which decides whether or not licences to authorise dealings with GMOs should be granted. The Regulator has broad discretion in the exercise of its powers. All tests to be satisfied under the Act with respect to the granting of licences are subjective, to be determined by a value judgment of the Regulator. The Regulator is not required to consult the Ethics Committee or the Community Consultative Committee created by the Act; and whilst the Regulator must consult the expert Technical Advisory Committee, it is free to choose not to follow the committee’s advice.
- (c) (**Merit reviews**) Neither the public nor affected stakeholders (such as adjoining farmers) have merit appeal rights to challenge a decision of the Regulator to grant a licence. This is despite the implications of such a licence being significant for such persons. However, proponents whose licence applications are rejected (or approved on unfavourable terms) do have merit appeal rights to the Administrative Appeals Tribunal.

- (d) **(Insurance)** There is no requirement that insurance be held by persons who carry out dealings with GMOs. This is a matter that has been left to the discretion of the Regulator.
- (e) **(Geographical coverage)** The Act and Regulations do not apply to Norfolk Island (a territory of Australia).

Part A

1. The scope of the Act

The legislation regulates “dealings” with “genetically modified organisms”.

“Dealings” are defined to include:

- conducting experiments with GMOs;
- breeding or growing GMOs;
- using GMOs to manufacture products;
- importing GMOs,

as well as the possession, transportation and disposal of GMOs for any of these purposes.

A GMO, for the purposes of the Act, is any organismⁱⁱ whose genetic material has been modified by gene technology. For example, if a gene is added to a plant, or if one of its genes is altered or deleted, and this is done by gene technology (as opposed to by natural means, such as sexual reproduction), then the organism will be a GMO and be regulated by the Actⁱⁱⁱ.

The Act does not, as a general rule, regulate products derived from genetically modified organisms (“**GM Products**”)^{iv}. These products are intended to be regulated by other legislation^v.

3. What does the Act do?

The Act prohibits all dealings with GMOs, unless:

- (A) the dealing is authorised by a **GMO licence**;
- (B) the dealing is a **notifiable low risk dealing**;
- (C) the dealing is included in the **GMO Register**; or
- (D) the dealing is an **exempt dealing**.

GMO licences are the principal form of approval under the Act. The other three types of authorisation are intended to apply only to low risk dealings.

(A) GMO licences

GMO licences are issued by the Office of the Gene Technology Regulator (the “**Regulator**”).

Assessment process

The assessment process applicable to an application for a licence depends on whether or not the proponent intends to release a GMO into the environment.

If it does (as would be the case where GM crops are to be grown in the open) - then a comprehensive assessment procedure applies, involving stakeholder participation. The process is as follows:

1. If the Regulator believes that the proposed dealing “*may pose significant risks to the health and safety of people or to the environment*”, then it must publicly notify the application^{vi} and invite submissions from the public.
2. The Regulator must prepare a risk assessment and a risk management plan. These are intended to identify risks posed by the dealing and ways in which those risks can be managed.
3. The Regulator must advertise the risk assessment and risk management plan, and invite submissions from the public^{vii}.
4. The Regulator must seek advice from the States and certain other bodies.
5. The Regulator has 170 days to determine the application^{viii}.

If the proponent does not intend to release a GMO into the open (as with experiments within a contained laboratory) – then the process involves step 2 above only, and the Regulator has 90 days to determine the application. Such applications do not involve public notification or provide an opportunity for stakeholder submissions.

The test for grant of a licence

A licence may only be issued, if the Regulator is satisfied that:

- (a) the proposed dealing is able to be managed in such a way as to protect the health and safety of people and the environment;
- (b) the applicant is a suitable person to hold the licence; and
- (c) the licence would not be inconsistent with any policy principles published by the Ministerial Council^{ix}.

(B) Other categories of authorisation

The remaining three categories of authorised dealing are not examined in this paper in detail.

Broadly:

- (a) ‘notifiable low risk dealings’ and ‘exempt dealings’ are dealings of a type listed in the Regulations. Such dealings must comply with requirements set out in the Act (e.g. they must be carried out in a contained facility).
- (b) The final category of dealings are those which the Regulator believes to pose minimal risk to human health and the environment and which the Regulator has listed on a register called the GMO Register.

4. Access to information on authorised dealings

The Regulator is required to maintain a “Record of GMO and GM Product Dealings”. This Record is available to the public and is intended to be a comprehensive record of all dealings in Australia that involve GMOs or GM Products^x.

The Act permits the Regulator to declare information to be “confidential commercial information” for the purposes of the Act, in which event it will not be included in the Record or otherwise disclosed to the public.

The Regulator must not make such a declaration:

- (a) if satisfied that the public interest in disclosure outweighs the prejudice that the disclosure would cause^{xi}; or
- (b) if the information relates to locations at which field trials involving GMOs are occurring or are proposed to occur. Information regarding the location of field trials must be made public, unless the Regulator is satisfied that significant damage to the health and safety of people, the environment or property would be likely to occur if the locations were disclosed^{xii}.

B. Analysis

1. The power of the Regulator

The legislation gives broad discretion to the Regulator to decide if, and on what terms, licences should be granted.

To illustrate:

- (a) all tests to be satisfied under the Act with respect to the granting of licences are subjective, to be determined by a value judgment of the Regulator. Essentially, it is up to the Regulator to decide what level of risk is acceptable;
- (b) there is no requirement for a licensee to hold insurance. Whether or not a licence condition requiring insurance is imposed is a matter for the discretion of the Regulator;
- (c) whilst the Act creates an expert Technical Advisory Committee to advise on risks posed by potential dealings, it is up to the Regulator to decide whether, and to what extent, it will follow that advice;
- (d) there is no requirement that licences be limited in duration. This is a matter for the Regulator's discretion;
- (e) the Act creates a Community Consultative Committee and an Ethics Committee. However, the Regulator can decide if, and to what extent, these committees are consulted.

In essence, complicated issues such as:

- (a) the level of risk which is acceptable;
- (b) the level of precaution which should be taken; and
- (c) ethical considerations,

are reserved as a value-judgment for the determination of the Regulator.

The Regulator's discretion could have been limited in any of a number of different ways. For example, the Act could have provided as follows (no doubt, other tests could be formulated by experts):

- (a) if the proposed dealing may pose significant risks to the health and safety of people or to the environment (a test used elsewhere in the Act (s49)), then the Regulator may not grant a licence for the dealing without the concurrence of the Technical Advisory Committee;
- (b) the Regulator may not grant a licence permitting a release of a GMO into the environment, if the Technical Advisory Committee advises that there is a material risk the GMO will spread beyond the area the subject of the licence;
- (c) insurance could have been made mandatory.

2. No merit appeal rights

The Regulator's decision to grant a licence cannot be appealed on the merits. In other words, the Regulator's value judgment (or preparedness to accept risk) cannot be appealed to any more senior body.

This is despite the fact that the Regulator's decision making is largely unchecked^{xiii}, and that the grant of a licence can have significant implications for people living in the relevant area or for the livelihood of GM-free farmers^{xiv}.

However, applicants have merit appeal rights to the Administrative Appeals Tribunal to appeal any decision by the Regulator to refuse a licence or to issue a licence on conditions opposed by the applicant^{xv}.

3. Range of potential dealings

All experiments and other dealings with GMOs, whether for scientific, medical or agricultural purposes, require a form of authorisation under the Act.

The Act places no limit on the range of dealings potentially permissible under the Act, with 3 exceptions:

- (a) The Act prohibits the cloning of a whole human being (section 192B). The Act defines this as *“the use of technology for the purpose of producing, from one original, a duplicate or descendant that is, or duplicates or descendants that are, genetically **identical** to the original”*.

This prohibition would appear to allow human cloning so long as **one** genetic difference (no matter how minor) can be shown.

- (b) The Act prohibits experiments or research putting human cells, or a combination of human and animal cells, into animal eggs (section 192C).

This prohibition is limited to experimentation and research. It does not prevent **other** dealings with such organisms (such as the breeding of these organisms), where the experimentation or research is done overseas (or on Norfolk Island – which is not covered by the Act or Regulations).

- (c) The Act prohibits experiments or research that involves putting a combination of human cells and animal cells into a human uterus (section 192D).

Again, this appears to allow the breeding of such organisms - where the research and experimentation is done overseas or on Norfolk Island.

4. Efficacy of public notification

Where public notification is required by the Act, the obligation is to publish a notice in: (a) the Government Gazette; (b) a newspaper circulating in *all* States (i.e. The Australian); and on the Regulator's website. These are a surprising choice of publications, given that the Government Gazette is not generally read by the public, The Australian has a limited readership, and few people can be expected to regularly visit the Regulator's website, unless aware a licence application has been made.

A preferred approach would have been to notify neighbors or to those in the immediate locality of the proposed activity, directly. As it stands, a person is more likely to be notified of a home extension on a neighboring property, than a proposal to release genetically modified organisms onto adjoining land.

5. The assessment process for licences

The distinction described in Part A between dealings which involve a release of a GMO into the open environment and dealings which do not, is problematic, because a number of dealings may fall somewhere in-between. Taking the following dealings, for example:

- (a) the growing of GM plants in a greenhouse with an earthen floor (allowing drainage of water into the open environment) or with louvres that periodically open and close;
- (b) the growing of GM plants in a garden leading off a laboratory, if the garden has a high brick wall surrounding it;
- (c) an experiment in a laboratory, where waste water leaves via a drainage system into the open environment.

If the Regulator considers these dealings not to involve an intentional release of a GMO into the open environment, then they will not be publicly notified, and will not be subject to stakeholder scrutiny.

Given the risks potentially involved with GMO dealings, it would have been preferable for one assessment process to apply to all licences, and for that system to provide persons likely to be affected and the public at large an opportunity to express concerns and make submissions.

6. Why are GMO Bills also being considered by State and Territory parliaments?

It is unclear whether the Commonwealth has the constitutional power to legislate on GMOs in respect of all dealings, by all persons, all over Australia. According to the Explanatory Memorandum, gaps in constitutional coverage may include dealings with GMOs by certain individuals, State departments

and universities who are not involved in cooperative arrangements with corporations or in interstate trade and commerce.

To ensure the Cth's GMO laws cover the entire country (other than Norfolk Island), it is intended that each State and Territory will pass "mirror legislation", consistent with the Act and Regulations. It is intended that these laws will be centrally administered by the Commonwealth Regulator.

C. Conclusion

- (a) The wide range of dealings potentially permissible under the Act;
- (b) the broad discretion given to the Regulator to license activities to proceed;
- (c) the absence of objective limits on the risks which can be taken;
- (d) the lack of supervision of the Regulator; and
- (e) the inability to appeal the Regulator's value judgment in deciding to approve a dealing, make for a permissive (as opposed to a precautionary) scheme; one which places enormous responsibility in the hands of the Regulator.

ⁱ The author thanks Andrew Macdonald and Aviva Gulley (solicitor and volunteer, respectively, at the EDO) for their assistance with aspects of this article. Opinions are those of the author, alone.

ⁱⁱ Strictly, the Act covers "biological entities" (which includes organisms as well as entities (such as viruses) which are not organisms).

ⁱⁱⁱ The Act does not apply to somatic cell nuclear transfer if the transfer does not involve genetically modified material (clause 4 of the Regulations). The Act does not apply to humans which have been genetically modified solely by reason of having undergone somatic cell gene therapy (section 10).

^{iv} The Act extends to GM Products in two ways. First, the Regulator, in granting a licence to deal with GMOs, may make the licence subject to conditions concerning GM Products which are derived from GMOs the subject of the licence (section 62(1)). Second, the Act requires the Regulator to maintain a record of dealings with GM Products (refer section 4 above).

^v GM foods are regulated under State and Territory food Acts with the role of developing food standards resting with the Australia New Zealand Food Authority under the *Australia New Zealand Food Authority Act 1991*; GM therapeutic goods are regulated under the *Therapeutic Goods Act 1989* administered by the Therapeutic Goods Administration; GM agricultural and veterinary chemicals are regulated through a national scheme administered by the National Registration Authority under the *Agricultural and Veterinary Chemicals (Administration) Act 1992* and the *Agricultural and Veterinary Chemicals (Code) Act 1994*; and industrial chemicals are regulated through the National Industrial Chemicals Notification and Assessment Scheme under the *Industrial Chemicals (Notification and Assessment) Act 1989* and accompanying State/Territory legislation: Explanatory Memorandum p46.

^{vi} The notice must be placed in the Government Gazette, a newspaper circulating generally through all States and on the Regulator's website (section 49).

^{vii} The application must also be made available to the public (section 54), unless declared confidential (refer part 4 below).

^{viii} This can be extended in certain circumstances, such as where the Regulator is awaiting further information from the applicant (Clause 8 of the Regulations).

^{ix} The Ministerial Council is yet to be formed, and cannot be formed until at least 4 States and the Commonwealth have signed the "Gene Technology Agreement".

^x Refer section 138 of the Act. In relation to licences, the Record must contain the name of the licence holder; persons covered by the licence; dealings authorised by the licence; the GMO to which those dealings relate; any licence conditions and the dates on which the licence was issued and will expire.

^{xi} Section 185(2) Act.

^{xii} Section 185(2A) of the Act. (The Regulator must publicly provide written reasons for any decision not to disclose the location of field trials.)

^{xiii} Refer section 30 of the Act which states that "the Regulator is not subject to direction from anyone in relation to whether or not an application for a GMO licence is issued or refused"

^{xiv} Contrast this with NSW planing law, where merit appeals are available to objectors to certain types of developments; e.g. poultry farms over a threshold size.

^{xv} If the Regulator grants a licence in breach of the Act (for example, because it has not followed the Act's procedural requirements) then "aggrieved persons" (undefined) can take judicial review proceedings to remedy the breach.

Economic and environmental risks of introducing GE canola into Australia

The proposed introduction of genetically engineered (GE) food crops into Australia is an important issue for the future of Australian agriculture. Not only are there concerns about the environmental and agronomic impacts of GE crops, there are major concerns about segregation, liability and market access. This briefing will focus on the economic impacts of introducing GE canola into Australia, discuss issues of market access, segregation, liability, and give a brief overview of the environmental impacts of GE crops. Further consideration of the environmental risks of GE crops are outlined in other Greenpeace briefings.

Markets are rejecting GE food

Australians generally don't want to eat GE food. Recent market research in Australia shows that:

- 68% of Australians would be less likely to buy a food if they knew that it had been genetically engineered. [Taylor Nelson Sofres, April 2002]
- 73% of Australians think that the use of gene technology in food and drink is a risky application for society. This had increased from 67% in 1999. [Biotechnology Australia, June 2001]

Domestic market

The following companies have public policies that mean they will not use products that contain, or have been derived from GE ingredients (this includes rejection of the use of GE animal feed for dairy and meat products):

Companies rejecting GE from their entire food chain – including highly processed ingredients (such as oils) and animal feed	Companies rejecting GE from their food chain - including processed ingredients but not extending to animal feed.
Unilever Dick Smith Foods Heinz Watties Arnotts Campbells Burger King Berri Murray Goulburn National Foods	Sanitarium Goodman Fielder Coles Effem Pauls Parmalat Mars Confectionary and many others.....

This list is not exhaustive, but gives an indication of the extent of domestic market rejection of GE foods.

Export markets

The following tables indicate the primary export markets for Australian canola seed. It is commonly stated that the EU is not a market for Australian canola. However, while it is true that the EU does grow and in fact exports considerable quantities of canola, it remains a major export market for Australian canola. As can be seen from the tables below, the EU has been the third biggest market for Australian canola averaged over the past five years.

Exports of Australian canola (rape or colza seeds) averaged from 1997 – 2001

Country of Destination	Tonnes	Value (FOB) (\$'000)	% of total
China	2,033,278	\$734,070	33%
Japan	1,604,220	\$642,419	29%
EU	738,563	\$287,056	13%
Bangladesh	554,301	\$228,282	10%
Pakistan	344,779	\$127,782	6%
Mexico	242,110	\$91,885	4%
Other	201,722	\$80,480	4%

Total	718,973	\$2,191,976	100%
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Source: Australian Bureau of Statistics – averaged from 1997 – 2001

The European Union is soon to tighten its GE labelling laws to include labelling of highly processed ingredients (such as oils and starches) which derive from GE crops, as well as labelling of GE animal feed. The European Union is basically closed to GE foods. Over the past six to nine months, the market for animal feed has shifted dramatically and is now approximately 30% non-GE. Even if approval is given for the use of more GE foods in the food chain, the market is very clearly rejecting GE.

China introduced new GE labelling legislation in July 2001. At this stage, the labelling is ambiguous however indications are that it will include labelling of highly processed ingredients (oils etc) as well as raw materials that contain GE DNA. China does import significant quantities of GE soy and canola, however, some buyers are requesting non-GE and several shipments of GE soy from the USA. have been rejected. It is expected that GE status will continue to be a barrier to trade with China into the future.

Japan has GE labelling legislation and there are currently mixed signals coming from Japanese importers regarding the GE status of food products. Many importers are requesting non-GE product. Many Japanese importers of dairy product require that dairy products be derived from cows that have been fed non-GE feed and Australian exporters are now meeting this requirement. Japan does still import significant quantities of GE soy and canola, however there is a growing demand for non-GE as consumer awareness about the issue increases.

Segregation is impossible in practical terms

Given the fact that a large part of the market (both domestic and export) for Australian produce is demanding non-GE, effective segregation is required unless we are willing to lose significant market access. Australian primary producers simply cannot ignore the elements of the domestic or export markets that are demanding non-GE food.

However, effective segregation is impossible. Contamination can occur at a number of different stages in the production and delivery of canola crops: cross pollination of crops in the field, direct seed movement, co-mingling and contamination during harvesting and handling. Even if *everybody* in the entire supply chain does what they are supposed to do *at all times*, contamination will still occur.

Cross-pollination

The recent study by Dr Mary Reiger and colleagues from the Adelaide Weed CRC, South Australia is seen by the GE industry as the most relevant study into pollen flow from canola. The Reiger study demonstrates that cross-pollination will be a major problem for farmers, finding that cross-pollination rates of approximately 0.01% up to 2.6km away from the source. However, if this were not considered enough of a concern, the study itself also had major shortcomings that lead to an underestimation of cross-pollination of GE canola in a commercial context:

1. The study ignores the accumulative effect of contamination from different fields that would occur under commercial conditions where up to 50% of canola fields may be GE.
2. The study assumes that the pollination dynamics are the same for conventional as for GE canola. This is contradicted by research that indicates that GE crops can have a much higher propensity to cross-pollination.
3. The study ignores 'acts of nature' such as dust storms, which have in some instances in Australia carried more than 10 million tonnes of inland topsoil out to sea. Canola pollen normally lives for up to four to five days. In dry windy conditions, its life would be reduced. However it would still survive long enough to remain viable over several hundred kilometres.

What does 0.01% cross pollination actually means for farmers?

- A canola plant can produce between 5,000 and 10,000 seeds that can lie dormant for up to ten years.
- In an average paddock of canola, seeding rates are normally very high, with plant densities typically in the order of 60 plants per square metre.
- 60 plants per square metre means 600,000 plants per hectare. A cross pollination rate of 0.01% means 0.01% of 600,000 – which is 60 GE plants per hectare at a distance 2.6km away.
- Each of these 60 plants can produce up to 10,000 seeds, leading to over half a million GE contaminated seeds per hectare – a distance 2.6km away from the source.
- It is obvious however, that with such a high seed production rate (10,000 per plant), contamination will grow and will spread very quickly in subsequent years. The allowable thresholds to maintain access to non- GE markets (0.5% for the European Union) may be able to be complied with in the first year, but will be very difficult to meet in subsequent years.
- Once contamination occurs, the fact that canola seeds can remain viable in the soil for up to 10 years means that it will be very difficult, if not impossible, to reverse the release of canola into the environment.

Harvesting and handling canola seed

The following is an extract from the Australian Grain Harvesters Association submission to the Gene Technology Grains Committee framework for coexistence:

Pre harvest – non-GMOs

Windrowing – most often done by contractors – occurs approximately 2 weeks before harvest. Because canola is a crop that does not uniformly ripen, windrowing can incur some seed shattering. Seeds will be trapped in all sorts of crevices & spaces in the windrower as well as displaced to ground.

Canola has approximately 360,000 seeds per kilogram. Auger bins, field bins, field augers, farm silos & trucks are also often used to handle grain on & off the farm. All grain handling machinery has many places where grain will be trapped & may dislodge at a later date. No machinery operator or owner, taking all due care, can warrant the absolute security & integrity of the cleaning process.

Windrowers, harvesters, auger bins, tractors & trucks move from canola crop to canola crop with a sense of urgency, without delays or restrictions & with complete certainty that the canola they windrow or harvest at one farm is most likely to be going into the same grain handling system as the canola they windrow or harvest from the next farm.

There is complete freedom to operate.

Post harvest – non GMOs

Harvest is over, machines are cleaned & put back in the shed, canola is trucked & delivered to receival depots, cheques are in the mail. Some weeks or months after harvest, it rains. Volunteer canola, weeds grasses etc. germinate. 99% of farmers go out & spray their paddock(s) with glyphosate to control moisture-robbing weeds in the previous canola crop paddock. All things being equal, complete or satisfactory weed control is achieved. The cropping cycle is nearly complete with an accepted management practice setting the farm up for another successful cropping year ahead.

Harvesting in a coexistence supply chain

The introduction of GMO canola into the harvesting equation, totally changes the whole operation. From one of complete confidence & freedom to operate, to another of entire insecurity & ambiguity. Add to this the very real possibility of litigation from cross contamination & you have a recipe that will restrict the businesses of contract windrowing, harvesting & grain haulage to a point of non-profitability.

Harvesters will have considerable problems & incur major expenses when moving from non-GMO crop to GMO crop & vice versa. These costs cannot & will not, be born by the harvesting industry. Harvesters will have to do a complete clean down when moving from a GM crop to a non GM crop & vice versa. A complete clean down does take between 1.5 to 2 days! That means removing all panels, covers, sieves, auger covers & troughs, pickup belts, table auger covers, skid plates, rotor & drum bar covers, concaves (in some instances), access to beaters, walkers, tyne separators, choppers, chaff spreaders, grain tank auger covers, unloading auger covers, engine bay covers & every other nook & cranny that seeds or crop residue may & most likely will be concealed. Even after all that, there is absolutely no guarantee or assurance given that the header is completely clean. Promoters of the introduction of GMO crops into Australia readily scoff at this very real scenario.

Non-GE supply chains to pay for segregation

As it currently stands, for a non-GE grower to supply the non-GE market, they require no identity preservation or testing regime in relation to GE. All that is required in order for a grower to gain access to any of the domestic or export markets that demand non-GE is a statement from AQIS, to the effect that GE crops of the relevant variety are not grown in Australia. This is free.

The minute that even a small percentage of the Australian canola crop is planted to GE, all of the growers supplying the GE market will require an identity preservation system of some sort. This will not be free. It will cost money and time. This will place a cost burden on the whole industry, making Australian produce less competitive (or less profitable) in non-GE markets. This increased cost of identity preservation has been estimated by the Australian Bureau of Agricultural Research and Economics (ABARE) to be 10%. These costs will be born by all growers – including non-GE growers.

Identity preservation will not only be required on farms, it will be required throughout the harvesting and handling process, as well as in the stockfeed and food manufacturing industry.

Liability issues

Currently, liability regimes are inadequate to safeguard the environment or the public, and there is concern within the insurance industry over the risks of GMOs. In a submission to the House of Representatives by the Australian Insurance Council, the Council said “There is a perception amongst insurers that genetic engineering is dangerous characterised by an extremely diversified risk profile of a new technology.” Swiss Reinsurance, one of the largest and most respected reinsurers in the world, made the following points:

1. For the insurance industry, genetic engineering is potentially one of the most exposed technologies of the future.
2. The less acceptance the public shows towards new risks, the less trust is placed in the means to deal with them and the greater the likelihood that the possible negative consequences of each new technology will become a problem for the insurance industry.
3. The risk profile of genetic engineering is extremely diversified and very difficult to anticipate. There is no clear conception of the risks accepted - so how can the risks of genetic engineering be insured?

Environmental risk

Scientists have a very limited understanding of genetics, biology and ecosystem complexity and can therefore not predict the ecosystem effects of genetically engineered organisms. Application of the precautionary principle demands extreme caution.

Many ecologists believe that the release of these unpredictable organisms could have far reaching consequences in much the same way that non-native species, once released, have invaded and threatened our natural heritage. Such effects may only emerge after a few generations. Persistent GE crops can cross with related weeds to become herbicide resistant ‘superweeds’.

Horizontal Gene Transfer, the transfer of DNA between unrelated species, has already shown to be possible between genetically engineered food and gut bacteria, as well as GE crops and soil bacteria.¹

Traditionally pollution is thought to breakdown and decrease over time. However genetically engineered crops are a living form of pollution that can reproduce and spread. This poses a serious and potentially irreversible threat to the environment. When cross-pollination occurs, this GE pollution cannot simply be recalled or cleaned up.

Conclusions

The decision on whether or not to introduce GE canola into Australia is not about science. It is about specific products, economics, politics and about environmental risk. Due to the irreversible nature of the decision, it cannot be left to the market. As soon as even a small area of GE crops is planted, all other growers will face increased costs due to the need for identity preservation systems.

There is no market in the world that is demanding, or even requesting GE food. Of the markets that accept GE food, most do so in the absence of labelling requirements. The more people know about GE food, the less they accept it and there are an increasing number of markets that are now demanding GE free. As GE labelling is introduced into more and more countries (and is tightened in the case of Europe), market signals against GE will continue to grow.

Australia is a small producer in the international grain business. Currently our GE-free status provides a point of difference from our main competitors in Canada, the US and Argentina. Why discard this source of competitive advantage? The environmental, health, agronomic, economic and legal risks clearly outweigh the unsubstantiated promises of the biotech industry.

¹ Mercer D., Scott K., Bruce-Johnson A., Glover L. and Flint H. (1999) Fate of Free DNA and Transformation of the Oral Bacterium *Streptococcus gordonii* DL1 by Plasmid DNA in Human Saliva, Applied and Environmental Microbiology, Vol 65, No. 1, p 6-10

Labelling and approval of GE food

Food Standards Australia New Zealand (FSANZ), formerly ANZFA, is the government body that regulates the labelling and approval of GE foods.

Failing in their role as a food safety watchdog, FSANZ regularly defends the supposed safety of GE foods. Asserting that GE foods are no different from their non-GE foods (the concept of 'substantial equivalence'), they have publicly attacked opponents of GE foods by name, asking them "to put up or shut up".¹

Approval of GE foods

FSANZ also approves genetically engineered food, ingredients and processing aids. Currently 19 genetically engineered crops and their derivatives are allowed in our food, ranging from soybeans and corn, to sugarbeet, potatoes and cotton. You can find the list of approved food at:

<http://www.foodstandards.gov.au/whatsinfo/gmfoods/gmcurrentapplication1030.cfm>

As Dr Judy Carman from the Public Health Association clearly shows in her article *Human Health Safety Assessment*, none of these GE foods have undergone independent safety testing. FSANZ's 'assessment' does not mean independent testing but merely examining the data provided by the applicants themselves — the chemical companies Monsanto, Aventis, Syngenta, DuPont and Dow Agrosiences. The data provided by these chemical companies does not test for any medium or long-term effects of these foods on animals, let alone humans, but are based on short-term trials with often small sample sizes.

Compare this with pharmaceuticals, which are also created in the laboratory, however based on much more sophisticated science. Pharmaceuticals are subjected to several different stages of testing, before they are finally released onto the market. And with pharmaceuticals, consumers know they are consuming them, they are taking them in a prescribed amount and advised of possible counter-indications. Millions of people are however eating unknown amounts of GE food every day — potentially amounting to a huge risk for public health.

¹ <http://www.foodstandards.gov.au/mediareleasespublications/mediareleases/mediareleases2002/mediastatementfoodch1337.cfm>

Labelling of GE food

Since December 2001, Australia has laws for labelling genetically engineered ingredients. These are, however, only based on whether you can find GE protein (DNA) in the end product. The laws therefore do not tell us whether GE has been used at any point along the food chain.

Exemptions to labelling laws:

- Food where GE ingredients are highly refined (eg: cooking oils, sugars, starches). Most processed foods fall into this category and contain some kind of oil or starch;
- Foods where ingredients are made from animals fed with GE feed (eg: meat, milk, eggs, honey);
- Foods that are prepared at bakeries, restaurants, takeaways etc. So a Big Mac could be full of genetically engineered ingredients and McDonalds would not have to tell you by law;
- Foods that are 'unintentionally' contaminated by up to 1% per ingredient;
- Foods that use GE processing aids or food additives;
- Foods that contain GE flavours present at less than 0.1%;
- Foods that are processed before 7th December 2001. Companies were allowed an amnesty on any foods produced before this date, despite the fact that they had been given 18 months notice of the introduction of labelling.

If people do not know which foods are derived from GE, they cannot exercise their right to reject it. Labelling is about the basic right to know what our food contains. Considering the huge opposition to GE foods worldwide, minimal labelling could be interpreted as a deliberate attempt to force GE foods onto consumers.

Ninety two percent of all Australians want comprehensive labelling of GE foods.² Labelling is our right. Many people are opposed to GE on environmental, ethical or religious grounds.

Comprehensive labelling is also necessary to keep companies from using GE-derived ingredients in the future. Knowing that consumers reject GE food, many food companies only took measures to exclude in forms that do not require labelling. Demanding labelling of any GE-derived ingredients used in the food chain will ensure companies will stay GE-free right throughout the food chain.

Visit FSANZ at <http://www.foodstandards.gov.au>

² Taylor Nelson Sofres, April 2002 Poll on Genetic Engineering for Greenpeace

Negative labelling “GE-free”

The FSANZ website states: “The standard does not address negative label claims such as ‘GM free’ ... In order to be able to substantiate your [GE-free] claim you may need to exercise greater diligence than required for positive labelling.”³

Whereas a product can contain up to 1% GE ingredients and still not have to be labelled as GE, a “GE-free” label or equivalent is supposed to have zero contamination. Putting the onus on companies wanting to declare their products GE-free, The Australian Competition and Consumer Commission (ACCC) may consider accidental contamination as a false claim. So, companies using GE can still get away without having to label, those taking great lengths to eliminate GE from their supply chain, might not be able to take advantage of marketing themselves as GE-free in fear of liability for accidental contamination.

However, it is also important to point out that many GE-free labels only refer to one ingredient like soy and might not take into account whether GE animal feed has been used in the food chain.

International labelling

Many countries⁴ now have labelling, but the requirements vary — from the most advanced European model to the Japanese laws in which labelling is only compulsory if a product contains more than 5% GE.

In Europe, labelling legislation is undergoing further tightening, making it the toughest labelling regime in the world. EU labelling shows that consumer acceptance of GE food is not inevitable. The new EU legislation means:

- the allowed contamination of a product is being reduced from 1% to 0.5%;
- labelling of products is required if ingredients originate from GE crops;
- animal feed has to be labelled.

Contrary to Australia, (where labelling is based on testing the end product and therefore excludes highly refined ingredients and animal feed), Europe’s legislation asks manufacturers to obtain written assurances from suppliers right down the supply chain.

Internationally, the Codex Alimentarius Commission aims to set up an international standard for labelling of GE food. Whereas it would ideally enforce the labelling of anything that has used GE anywhere in its production, it is feared that this commission might actually set very low standards.

As the Codex labelling standard is a reference for the World Trade Organisation, it is feared that any national labelling legislation setting stricter standards will be treated as an illegal ‘trade barrier’ and could therefore be revoked.

³ <http://www.foodstandards.gov.au/assistanceforindustry/userguides/labellinggeneticallymodifiedfooduserguide/index.cfm>

⁴ Including Algeria, Bolivia, Brazil, China, Czech republic, the EU, Hong Kong, India, Indonesia, Israel, Japan, Republic of Korea, Latvia, Mexico, Norway, Paraguay, the Phillipines, Poland, Russia, Saudi-arabia, Sri Lanka, Switzerland, Taiwan, Thailand, Yugoslavia

The Australian government has pushed for the weakest position (in line with the US) in the Codex negotiations — asking that foods only be labelled if they pose a known significant health hazard.⁵ Considering that FSANZ sees no health risks in GE foods anyway, it would mean that basically nothing would be labelled as GE. Despite various polls showing at least 90% of Australians wanting GE foods to be labelled, as well as a long political procedure to get our regime established, Australian government representatives are undermining our own labelling system in international negotiations.

Whether the approval of GE in food or GE labelling, it is yet another example of the government's commitment to GE business, literally 'ruling out' any problems or opposition to GE foods.

⁵ Australia sabotages own GM food labelling system, Australian Consumers' Association, <http://www.choice.com.au/articles/a103192p1.htm>