Ministry for the Environment
Manatū Mō Te Taiao

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Genetic modification

Current controls in New Zealand and the Royal Commission's recommendations

The Royal Commission on Genetic Modification, an independent body established by the Government to look into and report on the issues surrounding genetic modification in New Zealand, reported on 27 July 2001. The Government has said that it will respond to the Commission's recommendations within three months.

The major conclusion of the Commission's report was that New Zealand should adopt a strategy of preserving opportunities and proceeding to use genetic modification selectively and with appropriate care. In drawing this conclusion, it explicitly rejected the idea of a New Zealand free of all genetically modified material at one extreme and the option of unrestricted use of genetic modification at the other.

While generally endorsing the current system for controlling genetic modification in New Zealand, the Royal Commission recommended a number of improvements. It also came up with three major proposals that related to its vision of a 'biotechnology century', so that there would be ongoing consideration of the environmental, ethical, cultural, scientific and economic issues relating to biotechnology.

The Commission's major proposals for institutions were to establish:

- a Bioethics Council to seek public input and advise on the ethical, social and cultural dimensions of biotechnology
- a Parliamentary Commissioner on Biotechnology, who could independently monitor, investigate and educate about the use of biotechnology in New Zealand
- a Biotechnology Strategy to ensure that New Zealand keeps abreast of developments in biotechnology and uses them to national advantage, while preserving social, cultural and environmental values.

ABOUT GENETIC MODIFICATION

For centuries farmers have sought to improve crops and stock by breeding from the plants and animals that had desirable qualities, eg, resistance to disease. Genetic modification is a more efficient method of producing improved varieties of plants and animals, that allows the introduction of qualities that can be passed on to its offspring in ways not possible through traditional breeding.

Today scientists can find individual genes that control particular characteristics, separate them out, change them, and transfer them directly into the cells of an animal, plant, bacterium or virus. Genes can be transferred in ways that cannot occur naturally, between different species and even between animals and plants.

EXISTING CONTROLS

New Zealand already has comprehensive laws to control genetic modification of plants, animals and other living things, and food containing genetically modified ingredients.

The Hazardous Substances and New Organisms (HSNO) Act 1996 gives the Environmental Risk Management Authority (ERMA) responsibility for approving or declining proposals to research, test, import or release genetically modified plants, animals and other living things. This Act also provides a set of criteria for making the decision to approve or decline proposals. Anyone can give their views to ERMA on applications that have been publicly notified. If it approves research in the laboratory or in the field, the Authority must impose controls to prevent accidental release.

ERMA has a Maori advisory committee, Nga Kaihauta Tikanga Taiao, which helps the Authority take account of the specific concerns of Maori, the extent to which applications address Maori perspectives, and the principles of the Treaty of Waitangi.

The Food Act 1981 gives the Australia New Zealand Food Authority (ANZFA) responsibility for developing food standards and assessing the safety of genetically modified foods. ANZFA scientists conduct safety assessments of any such foods, which then must be approved by Australian and New Zealand Health Ministers, before genetically modified foods can be sold here. Information must also be provided to consumers so that they can make informed choices.

USE OF GENETIC MODIFICATION

To date, most genetic modification in New Zealand has been for research purposes**.** Genetic modification has been used in laboratory research for 28 years. This includes research to identify genes and what they do, investigations of pest and disease resistance in plants and animals, development of plants with new characteristics (eg, novel flower colours), and research that will help to understand, diagnose and treat human diseases (eg, multiple sclerosis).

Genetic modification is also used in teaching students at universities and other educational institutions.

Some medical drugs and treatments used in New Zealand for 15 years (eg, insulin, growth hormone) are produced using genetic modification technology though they do not actually contain genetically modified material. Animal drugs and vaccines may also be produced through genetic modification technology.

Field test of maize resistant to insects

The controls imposed on field tests by ERMA are to prevent unintended release of the genetically modified material and to ensure thorough monitoring is carried out. The controls on a field test of maize resistant to insects are numerous and detailed. They include:

- restricted access to the seed and the plants, and monitoring of the site to prevent unauthorised access
- any seed not planted or exported to be destroyed by incineration
- the pollen tassels and ears of corn to be fully contained in weatherproof bags from before pollen production until after ears of corn have grown and been harvested, with pollination and harvesting to be done by hand
- measures to be taken to prevent birds and rodents having access to the plants, and the bags to be monitored for bird or rodent damage
- equipment and clothing used by workers to be thoroughly cleaned at the field test site
- all genetically modified plants to be destroyed at the end of the trial
- ongoing monitoring of the site after the test has finished to make sure no plants have survived.

FOOD SAFETY

No fresh produce (fruit and vegetables) or meat available in New Zealand is genetically modified. Any food products that could reproduce (eg, fresh tomatoes) would require approval from ERMA as well as from ANZFA. No such approval has been applied for or granted so far. There is some use of genetic modification in dairy products.

Processed foods containing some genetically modified ingredients may have been sold here for as long as 10 years. While no plants or animals used for food are genetically modified in New Zealand (except as part of research), genetically modified crops such as soybean, corn, canola, cotton, potato and sugarbeet are grown commercially in other countries. Processed foods like margarine, soya sauce or soups may contain genetically modified ingredients.

Under New Zealand law only genetically modified foods that have been evaluated by ANZFA (Australian New Zealand Food Authority) and approved by ANZFSC (Australian New Zealand Food Standards Council) can be sold here. The approval process requires careful evaluation of each food on a case by case basis. To gain approval, the genetically modified food must be as safe as its conventional counterpart.

The new Food Administration Authority will work alongside ANZFA to enforce food standards.

From December 2001, foods that have been derived from genetically modified organisms (eg, containing soya flour from genetically modified soya beans) must be labelled. The standard is based on what the product contains, not what process was used to produce it. There are some exemptions, eg, takeaway food.

While the Royal Commission did not accept that banning the production, importing or sale of genetically modified food was viable, it said that the food industry must be subject to rigorous standards, properly enforced and carefully monitored. In addition to advising that the existing rules be better publicised, it recommended that a voluntary labelling scheme be introduced so that consumers can identify foods that are completely free of genetically modified content or processes.

The Commission also recommended that the new Food Administration Authority give consumers information about use of gene technology in food and genetically modified content in other foods, such as restaurant and takeaway food. It said that the Authority should monitor research on stock feed to ensure that it could not cause any adverse health effects for people.

PLANTS AND ANIMALS

Under New Zealand law, laboratory research, field testing or release of genetically modified plants, animals or other living things must have approval from ERMA. The Authority must impose conditions on research and field tests to prevent accidental release, though under current law no conditions can be imposed once a plant, animal or other living thing has been approved for release.

No approval has been given to release genetically modified plants, animals or other living things in New Zealand. Any application to release a genetically modified plant, animal or other living thing must go through a comprehensive assessment process before approval could be given. ERMA must reject an application if there is not enough information to assess the negative effects of the release.

A field test is a step in the research process, to gather information about how the plant or animal behaves outside the laboratory. The plant or animal grows in conditions similar to the environment in which it is likely to be released but under strict conditions to prevent escape.

Several field tests with genetically modified plants (eg, pine trees, maize), one fermentation trial and four field tests of genetically modified animals (eg, cattle) are under way in secure facilities with tight controls (see box).

Before the Hazardous Substances and New Organisms Act came into force in 1988, 23 field tests had been started, after assessment by a group of experts. All but one has been completed.

The Royal Commission recommended that a new category, 'conditional release', be developed, to allow controls to be put on genetically modified animals, plants or other living things once they have been released into the environment.

It recommended that the first application for release of a genetically modified crop be decided by the Minister for the Environment, using the call-in powers available under the HSNO Act. The Commission thought that this would allow the Minister to assess the likely overall economic and environmental impact of the release of a genetically modified crop and its impact on preserving opportunities for New Zealand.

A labelling regime was suggested to identify genetically modified seed, seedlings and plant material at point of sale. This would give growers the choice about whether they grew genetically modified plants and allow them to pass this information on to customers.

The Commission recommended that the Ministry of Agriculture and Forestry develop an industry code of practice to ensure effective buffer zones between genetically modified crops and unmodified crops or plants grown for seed. It could also develop measures to avoid cross-pollination by bees between genetically modified crops and conventional crops and to allow continued production of GM-free honey

Field test of genetically modified cattle

The genetically modified cattle are part of the research into treatments for multiple sclerosis. The detailed controls imposed by ERMA cover many pages. They include extensive monitoring and:

- limits on the number of cattle
- identification of all cattle with ear tags and microchips so that they can be tracked
- keeping cattle in a secure area with two high fences and electronic monitoring to detect breaks
- all genetically modified cattle and their offspring to be disposed of by burial on-site.

WHAT HAPPENS NEXT?

The Government is looking carefully at the recommendations in the Royal Commission's report.

Many different government agencies are involved in advising on the implications of the recommendations and how they could be put in place. The Government will announce its decisions by 31 October 2001.

A voluntary moratorium on all applications for release of genetically modified organisms and on applications for field-testing (with limited exceptions) will continue until then. The moratorium was originally negotiated between the Government and relevant industry and research groups at the time the Royal Commission was established.

FURTHER INFORMATION

The Royal Commission's findings and recommendations were published in a 464 page report and three volumes of appendices. Copies of the Royal Commission's report are available from Bennetts or other bookshops selling government publications. The report is also available on CD Rom or from the Royal Commission's website at www.gmcommission.govt.nz

Information about the Government's decisions will be available from the Ministry for the Environment at www.mfe.govt.nz or phone (04) 917 7400 after the Government has announced its decisions.

ABOUT THE ROYAL COMMISSION ON GENETIC MODIFICATION

The Royal Commission on Genetic Modification was an independent body established by the Government to look into and report on the issues surrounding genetic modification in New Zealand. The Royal Commission came to an end on 27 July 2001 when it presented its report to the Governor General of New Zealand, Dame Silvia Cartwright.

A Royal Commission is the highest form of public inquiry that a Government can establish. Because of the significance of genetic modification and public concerns about the impacts it could potentially have on New Zealand, the Government decided that a Royal Commission was the most appropriate way to move forward on this issue.

The Royal Commission on Genetic Modification was established by Order in Council on 8 May 2000. A Commission is not a Court of Law - the Government is free to decide whether to accept these recommendations in whole or in part or to totally reject them. The aim in setting up the Royal Commission was to stimulate a broad-ranging discussion on genetic modification and consideration of the strategic options available to New Zealand.

Who made up the Royal Commission?

The Royal Commission was chaired by the Rt Hon Sir Thomas Eichelbaum, formerly Chief Justice.

Other members of the Commission were:

- Dr Jacqueline Allan (Kati Mamoe ki Rakiura, Kai Tahu), an Auckland GP with considerable experience in the area of Maori medical health. She brought an understanding of both medical and Maori issues to the Commission.
- Dr Jean Fleming, Scientist and Senior Lecturer, Department of Anatomy and Structural Biology, Otago Medical School. She is highly qualified in the field of Biochemistry, Physiology and Structural Biology.
- Rt Rev Richard Randerson, Bishop of the Anglican Church, of Auckland who has an extensive academic background in religious studies, and brought a solid understanding of ethical issues to the Commission.

What was the role of the Commission?

The Commission was set very clear terms of reference. The terms of reference governed what the Commission was obliged to do, and also, what it was entitled to do.

The Commission had two objectives. First, to identify the strategic options available to New Zealand in respect of genetic modification, genetically modified organisms and products from them. Second, to identify any changes considered desirable to the current legislative, regulatory, policy and institutional arrangements for those things.

The terms of reference also identify a range of relevant matters that the Commission could look into as part of its inquiry into genetic modification. These were:

- the present application of the technology and its products in New Zealand
- the uncertainty, risks and benefits of the technology in New Zealand (and relate the risks and benefits to groups in New Zealand society)
- issues of liability
- intellectual property issues
- Treaty of Waitangi issues
- the effect global issues have on New Zealand
- opportunities available from use, or limiting of use, of the technology
- the public interest issues (including human health, environment, economic, cultural and ethical concerns) and related key strategic issues
- international implications, in respect of New Zealand's international legal obligations and foreign and trade policy
- the range of strategic outcomes
- the adequacy of statutory and regulatory processes.

Who has the Commission consulted with?

The Royal Commission undertook a comprehensive public consultation process over 12 months. The Commission held 15 public meetings, 10 regional hui, one three-day national hui and a youth forum. It received more than 10,000 public submissions.

The Commission also sought applications for Interested Person status - that is someone who had an interest in the Inquiry apart from the public, such as an ethical, religious, Maori, business, research or health interest. Of the 250 applications that were received, 107 were granted Interested Person status and were heard by the Commission during its 12 weeks of formal hearings.

In addition, the Commission conducted a public opinion survey of 1,153 New Zealanders by telephone.

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