

# section 3.4 |



appendix 2

## Outcomes of Consultation: Submissions from Interested Persons

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## 3.4 Strategic outcomes

### Introduction

Around one-third of the Interested Persons (37 submitters) provided substantive comment on strategic ‘outcomes’ as a component of the three Warrant items (items (1), (k) and (m)) dealing with strategy. With respect to the principal sector focus of these submitters, two-thirds (25 submitters) were from the economic/productive sector, three submitters were from the cultural/ethical sector, two were from the environmental sector, two were from the health sector and five were from other sectors. Looking at the industry groupings, the 37 submitters were primarily from industry networks or associations (just over one-third or 14 submitters), research organisations (eight submitters), and other advocacy networks or associations (five submitters).

In terms of stance on genetic modification which the submitters who made substantive comment on this issue took, most were assessed as ‘strongly for’ genetic modification (22 submitters) or ‘tending to be for’ (five submitters), with the remaining 10 submitters either ‘tending to be against’ (five submitters) or being ‘strongly against’ genetic modification (five submitters). The positions taken by submitters on genetic modification are reflected in the commentary on strategic outcomes below, where a greater proportion of comments reflect those of submitters who favoured genetic modification than those who were opposed to it.

The commentary provided below on the strategic outcomes for the promotion or avoidance of genetic modification has been categorised according to health, environmental, production, research, and cultural and ethical outcomes.

### Health

#### Health outcomes from use

A range of mainly health research and patient groups provided commentary on strategic outcomes that might be derived from the use of genetic modification technology in the health arena, principally focusing on outcomes for patient groups and greater understanding of biological processes.

Submitters identified key strategic outcomes of the **use** of genetic modification in health areas as including:

- better understanding of diseases
- better understanding of fundamental cellular processes
- new applications for prevention, diagnosis and treatment of diseases
- opportunities for improved health in New Zealand
- continuation of biomedical research opportunities
- ability to develop a basic research and teaching capability in recombinant DNA and genetic modification technologies in New Zealand
- possibility for New Zealand to develop a biotechnology pharmaceutical industry
- labelled food which allows consumer choice.

### **Range of health outcomes**

Lysosomal Diseases New Zealand [IP99] identified a range of beneficial strategic outcomes from the application of genetic modification in the areas of health, employment and economic growth and commented that “avoiding GM technology will maintain high levels of disability, and avoidable disease, suffering and death, [and] lead to third world health status”. Malaghan Institute of Medical Research [IP10] also outlined a range of strategic health outcomes from genetic modification stating that:

The strategic outcomes for future applications of GM, GM0s and products in the field of human health extend to every facet of the human condition from basic food requirements to understanding the nature of human disease and applying this knowledge to prevention, diagnosis and treatment.

### **Patient outcomes**

Patient and medical research groups tended to identify outcomes from genetic modification that would directly benefit the sufferers of specific conditions. For example, Malaghan Institute [IP10] identified considerable potential for gene therapy to treat complex diseases such as cancer and heart disease. Similarly, Diabetes Youth New Zealand [IP60] identified that patient lives, now and in the future, “rely on genetically engineered medicines”. Diabetes Youth commented further that their hopes for a cure, and a life free from the degenerative effects of their conditions, “lie in the latest techniques for manipulating biological material, including genetic modification and xenotransplantation”.

### **Greater understanding of biological processes**

Several submitters commented on the outcome that genetic modification would provide greater understanding of biological processes and human health

conditions. Sustainable Futures Trust [IP51] identified the potential for genetic modification research to contribute to the understanding and alleviation of genetic conditions. Researched Medicines Industry Association of New Zealand (RMI) [IP55] also observed that the most “critical” strategic outcome was ongoing research involving genetic modification in the health arena, permitting the creation and use of genetically modified organisms, and ongoing availability of genetically modified therapeutic products. Institute of Molecular BioSciences, Massey University [IP15] expressed a similar opinion that there was a requirement for New Zealand to develop a capability in basic research and teaching in recombinant DNA and genetic modification technologies. The Institute also noted the need for the Commission to understand the impact made by genetic modification on “our understanding of the fundamental cellular processes which govern the development and survival of plants, animals and microbes”.

#### **Other health outcomes from use**

Federated Farmers of New Zealand [IP34] noted that food altered by genetic modification should be clearly labelled to allow consumer choice. Physicians and Scientists for Responsible Genetics New Zealand (PSRG) [IP107] expressed the opinion that all of the desirable outcomes of applying genetic modification technology in medicine can be achieved without compromising the “GE-free” status of the New Zealand environment, or prejudicing the quality and standing of biological research in New Zealand.

#### **Health outcomes from avoidance**

Comments from Interested Persons on the avoidance of genetic modification in the health arena focused on the negative effects that could result for medical research and patient care and on beneficial outcomes that might result from having time to establish more knowledge about the risks of genetic modification. Submitters identified key strategic outcomes of the **avoidance** of genetic modification in health areas as including:

- reduction in medical research in New Zealand
- loss of tools to better understand medical conditions
- halt to advances in health research and treatment options in New Zealand
- reduced likelihood that New Zealand could be competitive in drug development
- greater assurance of food safety
- removal of unnecessary risks.

### **Effects on medical research and level of care**

Human Genetics Society of Australasia, New Zealand Branch [IP59] identified that if genetic modification were to be avoided then serious repercussions would be experienced in terms of research, application of molecular technology and clinical care of patients. Council of Medical Colleges in New Zealand [IP37] expressed similar views, noting that without access to genetic modification technology advances in health research in New Zealand would be halted and some treatment options and many diagnostic tools would be removed. Genesis Research and Development [IP11] commented that without genetic modification technology it was unlikely that New Zealand could be competitive in drug development.

### **Knowledge of risks**

ZESPRI International [IP46] commented that commercial food production should remain “GM free” until uncertainties were resolved and assurances of food safety could be given. In addition, Soil and Health Association of New Zealand [IP97] commented that there was no need to take unnecessary risks associated with genetic technology.

## **Environment**

### **Environmental outcomes from use**

Submitters, principally from research organisations, identified a range of outcomes from genetic modification that could provide environmental benefits. Submitters claimed that among these key strategic outcomes of the **use** of genetic modification in the environmental area were:

- better understanding of environmental systems
- greater control of pests and weeds
- protection of fragile flora and fauna
- bioremediation
- reduction in the use of herbicides and pesticides
- meeting international obligations.

### **Pest and weed control**

Landcare Research [IP12] noted that research and development of genetic modification products should continue in order to achieve the outcome of control of environmental pests, including possums, stoats and wasps. New Zealand Plant Protection Society [IP36] agreed that New Zealand was facing a “very significant risk of adverse impacts from pests, diseases and weeds” and expressed the opinion that “GMOs need to be considered for difficult pest management problems” as

part of the overall solution. The Society commented further that there were examples of primary production systems faltering or failing because of a lack of sustainable solutions.

New Zealand Agritech [IP73] and Interchurch Commission on Genetic Engineering [IP49] also identified the outcome that genetic modification could help protect New Zealand's flora and fauna by controlling pests. Similarly, Association of Crown Research Institutes (ACRI) [IP22] identified that with genetic modification technology New Zealand would be better positioned to attack its environmental problems relating to introduced pests, remediation of polluted environments and the potential for reduced demand for agricultural land.

### **Understanding of environmental systems and effects**

Royal Society of New Zealand [IP77] identified the knowledge gained from genetic modification as a strategic outcome that could be used to create wealth, wellbeing and provide “an informed understanding of the environment”. Landcare Research [IP12] expressed the desire to see an outcome of increased funding for research into assessing risk of adverse environmental effects of genetically modified crops and products.

### **International obligations**

Landcare Research [IP12] noted that it was important to permit the use of genetic modification tools for conservation genetics and related research so that New Zealand could fulfil its obligations under the Convention on Biological Diversity.

### **Other environmental outcomes from use**

Genesis Research and Development [IP11] identified a range of beneficial environmental outcomes through implementation of biotechnology for the New Zealand forest industry. These outcomes included: maintaining a competitive edge and increasing land value to owners, as well as potentially improving the environment through maintenance of biodiversity, bioremediation, reduced pollution through less use of pesticides and herbicides, and recapturing of marginal soil. Landcare Research [IP12] also identified the outcome of minimising exposure to broad-scale pesticides as a desirable strategic outcome of genetic modification.

### **Environmental outcomes from avoidance**

Submitters, principally from environmental and organics organisations, expressed views that the avoidance of genetic modification would allow a precautionary approach to be adopted until effects of genetic modification were known and that total avoidance of genetic modification was the only way to protect the environment.

Submitters identified key strategic outcomes of the **avoidance** of genetic modification in environmental areas as including:

- development of superior foods and crops
- avoidance of unknown, long-term, potentially irreversible side effects
- provision of time to develop testing programmes for potential health and environmental effects
- provision of time to make a considered response
- protection of the biosphere.

### **Precautionary approach until environmental effects are known**

Royal Forest and Bird Protection Society [IP79] identified the outcome that unknown, long-term, potentially irreversible side effects could be avoided if genetically modified organisms were not released into the New Zealand environment. Similarly, Comvita New Zealand [IP74] made the point that genetically modified organisms should not be released into the New Zealand environment until consequences of recombinant DNA crop development could be assessed and objective testing programmes were in place to consider all potential health and environmental consequences. Environmental and Conservation Organisations of New Zealand [IP102] made a similar point; that a precautionary approach should be adopted and that time was needed to make a considered response to genetic modification in terms of environmental or health issues.

### **Avoidance of genetic modification as the only way to protect the environment**

Royal Forest and Bird Protection Society, Nelson/Tasman Branch [IP43] viewed the release of genetically modified organisms into the environment as “untenable” and believed that sustaining New Zealand’s unique flora and fauna and ecosystems was the paramount outcome to be achieved. On a similar note, Nelson GE Free Awareness Group [IP100] saw the avoidance of genetic modification as the only option that would allow “full protection” of the biosphere and all organisms residing in it.

### **Other environmental outcomes from avoidance**

Landcare Research [IP12] noted that if genetic modification technology were avoided then it would be important that New Zealand not be left exposed to substantial health, environmental and trade risks through heavy dependence on large-scale use of 1080 and other broad-scale pesticides.

## Production

### Production outcomes from use

Submitters, principally from primary producer groups, universities and biotechnology organisations, identified a range of strategic outcomes from genetic modification that could provide productive or economic benefits. Organics groups identified strategic outcomes from the use of genetic modification that might have adverse effects for the future of the organics industry in New Zealand.

Among these key strategic outcomes of the **use** of genetic modification in production areas were:

- maintenance and enhancement of New Zealand’s international agricultural competitiveness
- development and trade of intellectual property
- less reliance by New Zealand on overseas developments in genetic modification
- extraction of untapped value from food and fibre products
- development of superior foods and crops
- development of safe, sustainable internationally competitive products
- development of products that were better suited to specific purposes
- development of new cultivars in horticulture
- economic, social and environmental benefits for forestry
- loss of future earnings from organic products
- negative impacts on kiwifruit exports.

### **Global economic outcomes**

ACRI [IP22] noted that genetic modification technology offered the potential outcome of high-value, niche-market products and better positioning of New Zealand in the global economy. Similarly, Biotenz [IP25] commented that New Zealand could use its agricultural science knowledge with the modern tools of genetic science (such as genomics, bio-informatics and proteomics) to remain a world leader in agriculture and create wealth. New Zealand Biotechnology Association (NZBA) [IP47] made the point that it was essential that New Zealand did not rely on overseas developments in biotechnology or it would lose its competitive advantages in agriculture and horticulture.

Several submitters from the production sector commented on the strategic outcome of New Zealand being able to achieve greater competitiveness

internationally if genetic modification technology were adopted, in particular for primary production industries. Wrightson [IP3] commented that the economy was heavily reliant on primary production, and that New Zealand needed to use biotechnology in agriculture to maintain and increase its international competitiveness. Carter Holt Harvey/Fletcher Challenge Forests [IP17] and New Zealand Forest Industries Council [IP9] also noted that genetic modification technology would enhance the competitiveness and sustainability of New Zealand's primary sector industries. Similarly, New Zealand Wool Board [IP30] commented that access to genetic modification technology was essential to New Zealand's long-term competitiveness. New Zealand Dairy Board [IP67] and Agritech [IP73] agreed that responsible use of genetic modification technology was needed to maintain New Zealand's international competitiveness in biological exports.

### **Biotechnology outcomes**

Biotechnology groups identified a range of beneficial economic outcomes that might result from the use of genetic modification. RMI [IP55] noted that biotechnology industries were "crucial" to New Zealand's future economic and social wellbeing. Similarly, Monsanto New Zealand [IP6] identified that the development of biotechnology products could result in "safe, sustainable, internationally competitive products" that could sustain or further the standard of living of all New Zealanders. Hamilton City Council [IP20] also identified that genetic modification could be used to produce low-cost, high-value products and intellectual property for the international marketplace. Monsanto [IP6] commented that if biotechnology were embraced then this would be likely to lead to increased investment in biotechnology research.

### **Primary sector outcomes**

Organisations from the primary sector made comment on a wide range of economic outcomes that the use of genetic modification might generate for primary industry sectors, including new products and services. New Zealand Arable-Food Industry Council [IP56] viewed strategic outcomes of genetic modification in terms of improved crop plants, development of superior foods, multiplication of seed for re-export and creation of intellectual property. New Zealand Forest Industries Council [IP9] identified economic, social and environmental benefits from the development of biotechnology applications in forestry.

Wrightson [IP3] commented that biotechnology would allow New Zealand to extract untapped value from food and fibre. Wool Board [IP30] identified a range of outcomes from genetic modification technology important in New Zealand's

biological economy including: allowing new goods and services to be produced, improving existing products, and producing products more efficiently.

Meat Industry Association of New Zealand (MIA) [IP32] identified that if New Zealand were to keep up with the latest technologies, including genetic modification, then it would be in the best position to adapt to changing attitudes within markets and the approaches taken by competitors. Wool Board [IP30] expressed caution, noting that unrestricted use of genetic modification could potentially compromise New Zealand's future markets. ZESPRI [IP46] expressed concern that commercial production of genetically modified food could impact negatively for New Zealand on the export of kiwifruit.

### **Organic industry outcomes**

Organics groups, such as Organic Federation New Zealand [IP81] and Canterbury Commercial Organics Group [IP65], expressed the opinion that if genetic modification were promoted a strategic outcome would be a loss of present and projected future earnings from organic products. Golden Bay Organic Employment and Education Trust [IP104] was also of the opinion that the development of genetically engineered crop farming would destroy an entire market segment of organically grown crops and associated businesses. PSRG [IP107] agreed that field testing of genetically engineered foods would risk “irreparable damage” to the rapidly developing organics sector.

Producer groups, such as Dairy Board [IP67], commented on the possible conflict of interest between different production systems but noted that organic farming and farming using genetic modification technology were not mutually exclusive outcomes. Federated Farmers [IP34] agreed that adoption of genetic modification was compatible with a strong organic production industry. A2 Corporation [IP26] noted that New Zealand's clean green image was a valuable marketing tool that needed to be taken care of but stressed that that did not require banning genetic modification technology.

### **Production outcomes from avoidance**

Submitters, principally from environmental and organics organisations, identified a range of positive strategic outcomes that the avoidance of genetic modification might generate, including the development of organics and genetically modified free products and markets. Research, biotechnology and primary producer groups adopted an opposing view on the avoidance of genetic modification and identified a range of negative strategic outcomes, including contraction of research and teaching in universities, reduced economic performance of biological industries and reduced quality of life.

Among these key strategic outcomes of the **avoidance** of genetic modification in productive areas were:

- development of New Zealand’s clean, green, organic image and products
- diversion of energy and funding into “GM-free” alternatives
- opportunity for New Zealand to take advantage of high-value niche export markets for organic products
- opportunity for New Zealand to produce products for markets that demand “GM-free” food
- injection of capital from investors looking to exploit “GM-free” environments as a production base
- protection of the future of New Zealand’s agricultural economy
- opportunity to clarify risks and benefits of commercial use of genetic modification
- serious implications for New Zealand science and wellbeing
- substantial reduction in market opportunities and choice
- reduction of options in sheep industry
- inability to preserve export income earned by dairy industry
- detrimental consequences for economic performance of biological industries
- disadvantage for competitiveness of industry
- contraction of economy
- detrimental effects on quality of life in New Zealand.

### **Outcomes from being “GM free”**

The main economic outcomes of avoiding genetic modification presented by submitters related to the economic benefits that might be gained from marketing of New Zealand’s clean, green, organic image and products. Green Party of Aotearoa/New Zealand [IP83] considered that an outcome of a “GE-free” status would result in a “major boost to our food exports” and similarly, GE Free New Zealand (RAGE) in Food and Environment [IP63] identified the expansion of organic agriculture as a strategic outcome of the avoidance of genetic modification. Friends of the Earth (New Zealand) [IP78] expressed the opinion that avoidance of genetically modified products would lead to energy and funding being diverted into the development of “non-GM” alternatives in medicines, agriculture and other fields.

Several submitters identified positive strategic outcomes of a “GM-free” stance. New Zealand Council of Trade Unions [IP95] noted that if New Zealand delayed

the commercial release of genetically modified food then it could position itself as “GM free” and obtain price premiums and preferential market access for its exports. Similarly, Hamilton City Council [IP20] identified that the strategic non-use of genetic modification would allow New Zealand to sell products to markets that demand “GM-free food”. National Beekeepers Association of New Zealand, Poverty Bay Branch [IP62] also identified that high-value, niche-market export opportunities might arise if a “GM-free” position were adopted, but noted that the market promotional opportunities of being “GM free” would have to be desired by international markets. The Association also noted that limitation of genetic modification would lead to injection of capital and skill resources by overseas investors looking to exploit a “GM-free” environment as a production base.

Royal Forest and Bird Protection Society, Marlborough Branch [IP40] identified that New Zealand could have a global economic advantage from maintaining “GE-free” agricultural and horticultural crops. Canterbury Commercial Organics Group [IP65] also supported the view that New Zealand would have a more secure, sustainable and successful future as a “GM-free” nation and could take advantage of expanding export opportunities in the organic sector. Te Runanga o Ngai Tahu [IP41] commented that New Zealand’s future as an organic producer cannot coexist with genetically modified products.

Soil and Health Association [IP97] expressed the opinion that a ban on genetic engineering would protect the health and safety and the future of New Zealand’s agricultural economy. Similarly, Organic Product Exporters Group [IP53] commented that a moratorium on genetic modification would allow the opportunity to clarify risks and possible benefits that might arise from the commercial use of genetic modification.

### **Primary sector outcomes**

MIA [IP32] expressed the view that if restrictions were placed on genetic modification technology then New Zealand’s meat sector of the economy would contract. Crop and Food Research [IP4] also identified that a “substantial” reduction in market opportunities would result from avoidance of genetic modification technology. Wool Board [IP30] commented that a prohibition on genetic modification would reduce options for the sheep industry. Similarly, Dairy Board [IP67] commented that a totally organic strategy would not preserve the export income earned by the New Zealand dairy industry.

New Zealand Grocery Marketers Association [IP54] commented that restrictions on genetic modification would result in denial of consumer choice, breaching of international obligations and loss of economic benefits including competitiveness and economic vitality of industry. Similarly, New Zealand Vice Chancellors

Committee [IP18] and Lincoln University [IP8] noted that there would be detrimental consequences for the economic performance of biological industries and for the quality of life in New Zealand if genetic modification technology were avoided.

## Research

### Research outcomes from use

Submitters identified key strategic outcomes of the **use** of genetic modification in research areas as including:

- maintenance of the global competitiveness of New Zealand universities
- increased investment in biotechnology research
- participation of New Zealand in the knowledge economy

### Knowledge-based outcomes

Submissions from the universities expressed a clear view that if genetic modification were not adopted they would not be able to remain competitive in a global research and teaching market. Lincoln University [IP8] noted that genetic modification was a global research tool and modern universities could only survive in global markets if they generated and utilised new knowledge. Lincoln University commented further that it must be involved in genetic modification research and teaching “to ensure it remains globally competitive”. Auckland University [IP16] agreed that if it did not adopt genetic modification technology there would be a “significant adverse effect” on the University’s overall research effort and questioned whether it would be able to comply with the requirements of the Education Act 1989. Auckland University expressed the opinion that the option of allowing genetic modification within “an appropriate regulatory regime” was the only option that would be consistent with New Zealand participating in the “knowledge economy”.

Rural Women New Zealand [IP52] supported the views expressed by universities that through supporting genetic modification research New Zealand could maintain its position in the international knowledge economy. Institute of Molecular BioSciences [IP15] also noted that New Zealand must ensure that it was not left behind in the new “knowledge revolution”. NZBA [IP47] identified the need for a clear policy on genetic modification so that research funding authorities could create clear and open opportunities for research investment.

## Research outcomes from avoidance

Submitters identified key strategic outcomes of the **avoidance** of genetic modification in research areas as including:

- genetic modification research and teaching at New Zealand universities becoming outdated
- New Zealand's medical research capability being crippled.

### Knowledge-based outcomes

AgResearch [IP13] commented that if genetic modification technology were to be halted or restricted there would be serious implications for New Zealand science and wellbeing. University of Canterbury [IP7] provided the example that potential losses would be incurred by avoiding genetic modification as universities would cease to be current in their genetic modification research and teaching. Similarly, University of Otago [IP19] noted that its ability to deliver teaching and research of an internationally accepted standard would be seriously compromised if genetically modified organisms and their products were avoided. In an accompanying witness brief, the University commented further that avoidance of genetic modification was entirely incompatible with the development of a knowledge-based economy.

### Biotechnology outcomes

New Zealand Transgenic Animal Users [IP45] commented that New Zealand could not afford to avoid genetic modification animal research in the future. To do so would:

... cripple our medical research capability, negatively impact on our fledgling biotechnology industry, downgrade the quality of education in postgraduate biomedical and biotechnology programmes, and undermine our global credibility as a developed and technologically capable nation.

## Culture and ethics

### Cultural and ethical outcomes from use

Submitters, principally from religious, ethical and Maori organisations, identified a range of strategic outcomes from the use of genetic modification that focused around the need for establishing an ethical framework for decision-making on genetic modification and issues relating to genetic modification that were contrary to ethical or cultural beliefs or integrity.

Among these key strategic outcomes of the **use** of genetic modification in cultural and ethical areas were:

- transfer of human genes causing insult to Maori whakapapa

- impacts for Maori on whakapapa, kaitiakitanga and rangatiratanga
- licences for rights to genetics capable of being on-sold as leases
- world leadership in setting high ethical standards
- a culture fostering high-quality science and rigorous evaluation of issues
- scientific freedom within a culture of social and cultural responsibility.

### **Need for an ethical framework**

Public Questions Committee (Methodist, Presbyterian, Churches of Christ, Quaker) [IP93] commented that New Zealand could lead the world in setting high ethical standards in genetic modification research and development. New Zealand Catholic Bishops' Conference [IP38] also identified the need for regulation of the use of genetic modification to be based on principles of ethical decision-making and noted that if regulation were too onerous in areas of low-risk application, the benefits of genetic modification might be lost to New Zealanders. Environmental Risk Management Authority [IP76] also commented on the need for a robust regulatory process that involved a reflection of community views in decision-making on genetic modification and that allowed decisions capable of the prevention of unreasonable risks. Eubios Ethics Institute [IP96] noted that genetic modification technology would eventually be used in every country and that New Zealand would have to become “bioethically mature enough to deal with the future”.

HortResearch [IP5] noted that if New Zealand supported biotechnology, a culture that fostered high-quality science and rigorous evaluation of all issues, including safety, could be established. Meat New Zealand [IP31] and New Zealand Game Industry Board [IP33] commented that scientific freedom within a framework of social and cultural responsibility was a key factor for an environment in which technologies such as genetic modification could develop.

### **Maori issues**

Te Runanga o Ngai Tahu [IP41] expressed the view that the release of genetically modified organisms into the environment was not acceptable. Ngai Tahu also noted consequences for Maori in that the development of genetically modified organisms would have an impact on whakapapa, kaitiakitanga and rangatiratanga. However, New Zealand Maori Council [IP105] identified beneficial outcomes from genetic modification; for example, the possibility of creating licences for genetic rights which can be on-sold as leases (using a similar approach as the Crown Forest Rental Trust model) and with ownership of such rights determined by the Waitangi Tribunal.

## Cultural and ethical outcomes from avoidance

Submitters, principally from Maori, environmental, religious and other advocacy groups, identified a range of strategic outcomes from the avoidance of genetic modification that focused around the need to take time to establish an ethical framework for decision-making on genetic modification and issues relating to genetic modification that were contrary to ethical or cultural beliefs.

Among these key strategic outcomes of the **avoidance** of genetic modification in cultural and ethical areas were:

- avoidance of mixing of genes which is contrary to some religious beliefs
- compatibility with the Treaty of Waitangi
- right of Maori to an unmodified genetic endowment
- time for discussion of the options on genetic modification
- time for developing an agreed paradigm within which genetic modification would operate
- time for establishing ethical considerations for research applications
- avoidance of imposing the cultural and ethical views of some groups on to everyone.

### Maori issues

Nga Wahine Tiaki o te Ao [IP64] commented that “positive strategic outcomes” could be derived only from the establishment of a nation that was “GM free” and considered genetic modification to be “an act of violence against tangata whenua”. Maori Congress [IP103] proposed development of a “Tikanga Maori Framework of Protection” that had as a basic premise that Maori had a collective right to an undisturbed inheritance of the genetic cell line: ie, the right to an “unmodified genetic endowment”. Friends of the Earth [IP78] added that avoidance of genetic modification was the only option that would be compatible with the Treaty of Waitangi.

### Need time to develop an ethical framework

Environment and Conservation Organisations of New Zealand [IP101] made the point that a fully legislated moratorium on genetic modification would provide time for New Zealand to have wide-ranging discussions on genetic modification options before irreversible decisions were taken. Koanga Gardens Trust [IP72] agreed that genetic modification should not be permitted until all parties had agreed on a “paradigm” within which genetic modification should operate. Maori Congress [IP103] made a similar point, that genetic modification should be banned until a regulatory framework is in place that recognises Maori as

tangata whenua and provides them with a decisive role in the decision-making process. Similarly, SAFE (Save Animals From Exploitation) [IP85] suggested that any approvals sought for “laboratory-based research involving the genetic engineering of animals” should be subject to a system of ethical considerations such as those developed in the Netherlands. Dairy Board [IP67] made the point that the cultural and ethical views of some should not be imposed on everyone in terms of banning genetic modification.

### **Religious beliefs**

Quaker Spiritual Ecology Group, Religious Society of Friends [IP50] expressed its concern about genetic modification on “the spiritual and ecological understanding that all life is sacred”. The Group commented that New Zealand should not proceed with growing genetically modified crops because “GM mixes genes across species and kingdoms in ways that do not occur naturally”.