



appendix 3

Outcomes of Consultation: Submissions  
from the Public

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# 3.13 Main areas of public interest

## Background

Warrant item (j) invited submissions on the main areas of public interest. Four main areas were identified in the Warrant:

the main areas of public interest in genetic modification, genetically modified organisms, and products, including those related to —

- (i) human health (including biomedical, food safety, and consumer choice):
- (ii) environmental matters (including biodiversity, biosecurity issues, and the health of ecosystems):
- (iii) economic matters (including research and innovation, business development, primary production, and exports):
- (iv) cultural and ethical concerns

Public submitters also wrote extensively about social concerns.

## Outline of this section

This section of the report will outline views expressed by public submitters on the four main areas as identified in the Warrant, as well as social matters and risk and uncertainty. It will include the following sub-sections:

- general overview
- human health
- environmental matters
- economic matters
- cultural and ethical concerns
- social matters
- risks and uncertainty.

## Distribution of concerns

Table 3.20 provides a summary of public submitters' concerns across the broad range of topics they raised. The areas of concern that stand out are environmental risks, uncertainty around risks, health risks and food safety risks.

Submitters were also concerned about the capture of any benefits from genetic modification by multinationals. There was a general belief that only a few (almost always multinationals) will benefit from genetic modification and many (namely the general public) will suffer the costs. Other notable concerns included the ethical and spiritual implications of genetic modification, the irreversible nature of genetic modification application, the eroding of consumer choice and adverse economic impacts. The adverse economic impacts related to organic farming in particular, but also the opportunities New Zealand would forgo (for instance, taking advantage of niche markets based on our “clean, green image”) if we take the genetic modification road.

## Human health

Public submitters were more concerned about health prevention measures than diagnosis and treatment. This focus on prevention measures was consistent with their worries about the negative impacts of genetic modification. They often viewed genetic modification as the latest in a long line of technologies that potentially harmed their health, including cellular telephones, chemicals in the environment and in food, and well-known disasters such as thalidomide and Agent Orange. Some public submitters compared the ill health of themselves and others with the perceived good health of their ancestors and attributed the differences to technological interventions.

Submitters' main concerns focused on the health impacts from contamination of the environment and food by genetic modification applications. They viewed any tampering with the natural order of the environment and food as threatening to their health. Anticipated problems included:

- allergies from genetic modification-contaminated food, including new foods, and genetically modified pollens from genetically modified crops and unintended cross-fertilisation
- illness from unintended horizontal gene transfer in the environment
- loss of food quality, particularly its nutritional value.

Public submitters were also concerned about genetic modification-based treatments. There was some support for medical uses of genetic modification

**Table 3.20 Public submitters’ concerns about genetic modification  
(n = 9994)**

Concerns about GM	Number	%
Environmental risks	4979	49.8
Uncertainty around risks (lack of information)	4548	45.5
Public health safety risks	3620	36.2
Food safety risks (including lack of labelling)	3002	30.0
Benefits captured by multinationals	1905	19.1
Ethical and spiritual implications	1605	16.1
Irreversible	1519	15.2
Uncertainty around benefits (lack of information)	1106	11.1
Consumer choice	1043	10.4
Adverse economic impacts on industry (eg organic farming, tourism)	1023	10.2
Inter-generational equity	882	8.8
Biodiversity	729	7.3
Social and economic equity	591	5.9
Lack of trust	403	4.0
Public education on GM	383	3.8
Generalised disaster	311	3.1
Religious implications	280	2.8
Inappropriate reliance on science/technology	233	2.3
Cultural implications	195	2.0
New Zealand retaining control of flora and fauna	165	1.7
Biosecurity	64	0.6
Animal rights	60	0.6
Organic crops affected by GM crops	48	0.5
Sovereignty	8	0.1
Human rights	7	0.1

Multiple response

technologies so long as any application or research was contained. However, a large number of submitters did not want to be exposed to genetic modification-based medicines and demanded their right to choose whether to use them or not. Submitters commonly cited insulin as an example of a genetic modification-based treatment over which people have not been given choice.

Ethical issues raised by public submitters about genetic modification-based treatments included the potential breeding out of human imperfections, the use of animals as “bio-factories” for human benefit and the “wrongness” of gene manipulation.

Submitters also referred to the uncertainty around other so-called “wonder treatments” such as thalidomide as justification for their caution. They noted a lack of evidence of the long-term safety of genetic modification-based health treatments and the lack of testing of new technologies.

## Environmental matters

Environmental issues dominated public submitters concerns. Almost half of the public submitters made substantial comments about environmental issues. Often their concerns were of a general nature: they were concerned about the general degradation of the environment or ecosystems as a consequence of genetic modification activities. Some were concerned that the introduction of genetic modification would mean the loss of New Zealand’s “clean, green” environment or the loss of New Zealand’s genetic modification-free environment. Others anticipated more major consequences, for instance predicting a general destruction of the environment or some sort of undefined significant disaster. The range of concerns is briefly summarised below.

The application of genetic modification was viewed as a serious threat to the integrity of the environment. Integrity was identified as an environmental value for different reasons. Some submitters, particularly Maori, argued that people are custodians of the environment. Genetic modification activities violate this relationship in that inherent in the application of this technology is the notion that people have the right to have dominion over the environment. Others valued the integrity of the environment for religious or spiritual reasons, for instance from the perspective of Jewish, Christian, Muslim or other belief systems. Others took a “nature knows best” stance, arguing that any intervention of the scale that genetic modification entails is contrary to the natural order.

The threat to biodiversity that genetic modification poses was another strong theme amongst public submissions. The release of genetically modified organisms

into the environment could result in:

- the extinction of some species, for instance from general environmental degradation or as a consequence of specific problems such as genetically modified pollens or “super-bugs”
- the creation of new and dangerous genetically modified organisms such as “super-weeds”
- contamination of the environment from genetic modification activities, for instance with genetically modified organisms escaping from field trials or laboratories
- the irreversibility of genetic modification releases.

Genetic modification could lead to the destruction of the environment as an economic good. Public submitters believed that the current state of the environment (“clean and green”) provided New Zealand with the opportunity to maintain and expand current industries, particularly agriculture and horticulture, but also tourism. It also provides New Zealand with the opportunity to develop new industries and markets, particularly those based on environmental quality and freedom from genetic modification applications.

Some submitters also acknowledged benefits to the environment from genetic modification technologies. These technologies could be used for pest control, to reduce the use of chemicals in food production and other agricultural activities, and to reduce the amount of land used for agricultural and horticultural production. The latter could be achieved if genetic modification technologies enabled land to be used more intensively, thus freeing up other land or preventing commercial encroachment on to areas of high natural value.

## Economic matters

Public submitters were less concerned about the economic impacts of genetic modification, compared with impacts on health and the environment. Nevertheless, almost one in 10 of the submitters expressed concern about the impacts genetic modification use would have on industry, particularly organically based agriculture and horticulture.

When public submitters wrote about the economy, they almost always focused on the primary production sector. Very few considered the biotechnology industry and its direct contribution to the economy. They were more concerned about its impact on the primary production sector. Also, public submitters tended to perceive the economy as comprising two parts: the powerful and bad multinationals and the local and good small producers. They saw the application of genetic

modification as exacerbating this undesirable dichotomy. As multinationals foisted genetic modification upon New Zealand, the New Zealand economy would increasingly come under the control of foreign ownership and monopolies. Genetic modification, they believed, threatens the country's economic self-determination.

Submitters saw genetic modification avoidance as an opportunity to reverse current trends. That New Zealand is isolated, coupled with our cleanness and greenness, could become a strength if New Zealand is one of the few countries that rejects genetic modification. The country would be well-placed to provide genetic modification-free and organic produce to meet growing demand from countries that can not meet their own needs given their genetic modification use. Further, given that these larger economies would be precluded from participating in this niche market, our producers would not need to compete with larger producers that have economies of scale that currently give them competitive advantage.

In general, public submitters gave little attention to the value of the biotechnology industry for its own sake. However, some argued that New Zealand has the opportunity to develop its research capabilities in specialist biodynamic and organic areas. New Zealand, they believed, could become world experts in production processes that will become increasingly attractive to the rest of the world.

## Cultural and ethical concerns

When writing about cultural and ethical concerns, public submitters variously argued from religious, ecological, ethical, moral and ethnic perspectives. However, their messages were similar: genetic modification is wrong because it is tampering with “what is supposed to be”. It was common for submitters to cite Mad Cow Disease as the consequence of people tampering with the natural order: feeding herbivores meat products. From a religious perspective, genetic modification was rejected, for instance because it was “against the teachings of the Bible” or inconsistent with Muslims or Jewish beliefs about appropriate composition of food. From an ethnic perspective, which could often also be viewed as a spiritual perspective, tampering with the natural order was also unacceptable. For instance, a number of submitters pointed out how unacceptable the mixing of human and other genetic material is to Maori. Some people wrote about an ecologically based spiritualism that found any tampering with “Mother Nature” as abhorrent. Other ethical perspectives, including animal rights and vegetarianism, also shaped people's attitudes towards genetic modification, since they believed it

included exploitation of animals and mixing of genes from different species. The unease people felt about patenting, although sometimes argued from an economic perspective, was usually based on a belief that ownership of the “code of life” is immoral or unethical.

Altogether, of those public submitters addressing Warrant item (j), 18.1% raised concerns from an ethical and spiritual or cultural perspective (see Table 3.20). This figure, however, in some ways under-represents the extent of ethical, spiritual and cultural concerns of public submitters, many of whom articulated their unease in terms of more specific issues of genetic modification such as risk to the environment and food safety.

Sometimes public submitters also explained concerns about consumer choice and sovereignty as ethical issues. They often explained their rights to have choice, or give consent, as a human rights issue, with any removal of these rights undermining their individual sovereignty. They particularly defended their rights to have choices, or give consent, in health treatments, environmental management and food production and consumption. Sometimes, sovereignty was also discussed from a national perspective, expressing the right of the people of New Zealand to make a decision free of outside influence.

Despite the importance of cultural and ethical considerations, some public submitters believed these considerations are ignored by decision-makers. Some submitters felt that economic considerations are valued more highly than ethical considerations by decision-makers. There was a high degree of mistrust expressed by public submitters, particularly about:

- political decision-makers overly conscious of the needs of ‘big business’ rather than the people
- scientists responding to the needs of their funders, including the biotechnology industry, rather than the public and inclined to “do the science for its own sake” and personal ego gratification rather than for the benefit of the public
- any evidence about the safety and benefits of genetic modification, given their views about scientists, industry and government and the wide range of previous disasters. Commonly identified disasters included DDT, thalidomide, asbestos, cigarettes, Agent Orange and introduced pests.

## Social matters

A number of public submitters were concerned about equity issues. As Table 3.20 shows, of those submitters addressing areas of public interest, 5.9% commented on



current equity issues and 8.8% were concerned about inter-generational equity. When referring to equity today, it was the view of submitters that the application of genetic modification could create inequities or exacerbate those already existing in New Zealand and between developed and developing countries. Given the current control of, and advocacy for, genetic modification production and research, public submitters expected the benefits to be captured by the “haves” and the costs to be borne by the “have nots”. Similarly, they expected such distribution of costs and benefits on an international scale, with developing countries bearing the costs (for instance, through the destruction of local production processes) and developed countries (particularly through their multinational companies) to benefit. Those concerned about inter-generational equity issues were concerned that decisions made today may preclude future generations from access to health, a quality environment, quality food and economic choices.

Some public submitters feared that the application of genetic modification technologies would lead to total social breakdown. Some saw the origins of this in current decision-makers’ willingness to disregard ethical and cultural considerations in favour of technological advancement and economic gain.

If we value democracy as a cornerstone of our current society then, some submitters argued, that basis will be corroded by the introduction of genetic modification. Submitters argued that the principles of choice and consent, inherent in their concepts of democracy, need to be protected. These principles are particularly pertinent to the genetic modification debate, they argued.

## Risk and uncertainty

As Table 3.20 shows, public submitters’ concerns about risk and uncertainty and benefit and uncertainty were, together, greater than any other areas of concern. These concerns, discussed in detail in the section entitled “Evidence and Uncertainty”, stemmed from both a general distrust of the sources of information available to them and a belief that risk assessment processes are still undeveloped and imperfect. Thus, public submitters generally believed that scientists and those providing approvals for genetic modification applications lack the skills and mechanisms (as well as the will) necessary to properly identify and quantify the levels of risk. They also considered the evidence around benefits and safety to be uncertain.