

section 3.13 |

appendix 2

Outcomes of Consultation: Submissions from Interested Persons

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3.13 Global developments and issues

Introduction

The Warrant under item (h) called for information on:

the global developments and issues that may influence the manner in which New Zealand may use, or limit the use of, genetic modification, genetically modified organisms, and products

Global developments and issues raised by submitters in relation to genetic modification tended to focus around several themes including:

- global environmental issues
- globalisation of resources
- global competition
- consumer responses to genetic modification
- globalisation of indigenous issues
- global legal obligations
- national biotechnology strategies.

Thirty-eight submitters made substantive comment on the issue of global developments. In terms of type of submitter, the highest proportion (17 submitters) came from industry networks or associations. Of the 38 submitters who commented on global developments, the largest sectoral responses were received from biotechnology (eight submitters), primary production (four submitters) and environmental advocacy (four submitters). Findings from cross-tabulation of data on the submitters who made substantive comment on global developments showed that almost two-thirds of this group (24 submitters) took a 'strongly for' stance on genetic modification.

The majority of submitters focused on developments that might influence the use of genetic modification in New Zealand, with fewer submitters commenting on issues that might limit the use of genetic modification. Some of the submitters made comment on global developments and genetic modification without relating these comments specifically to New Zealand. Most submitters discussed global

developments in terms of genetic modification in general, rather than making specific reference to genetically modified organisms or products.

Some submitters, such as New Zealand Biotechnology Association (NZBA) [IP47], identified a range of global developments including population growth, human health, consumer trends, new industries, sustainable development and climate change as being issues that might be influenced by genetic modification.

Global environmental issues

The growth in environmental resource pressures was identified as a key theme by submitters: such pressures included world population growth, food shortages, loss of arable land, increasing salinity, water shortage, climate change, pests and pollution. Association of Crown Research Institutes (ACRI) [IP22] identified that global environmental problems were occurring on a large scale and that solutions to such problems would require a major effort.

Submitters put forward arguments for and against the use of genetic modification as a means of addressing these global environmental problems. In particular, submitters focused on potential solutions that genetic modification might offer in boosting global food production.

Global food production solutions offered by genetic modification

Several submitters outlined ways in which genetic modification could help reduce pressure on global food supply by:

- increasing overall global food production
- reducing food distribution problems through helping countries to develop self-sufficiency in food production.

They also commented on fair and appropriate use of biotechnology in dealing with global environmental issues.

Ability to increase global food production

A range of submitters identified the potential of genetic modification to increase global food production as a factor that might encourage use of the technology. Several agricultural crop producers and research companies made comment on this issue. New Zealand Feed Manufacturers Association/Poultry Industry Association of New Zealand/Egg Producers Federation of New Zealand [IP35] commented that many developing countries “desperately need some of the potential benefits of GE food”. Monsanto New Zealand [IP6] noted in its submission that food security would drive expansion in the use of genetically

modified crops, particularly in the developing countries. Aventis CropScience [IP14] also noted that its crop production enterprise was driven by global needs for food safety, sustainability and a cleaner environment; and that it saw biotechnology as playing a critical role in feeding the world's population (projected to be nine billion by 2025). Crop and Food Research [IP4] agreed that ensuring the sufficiency and security of world food supply would provide strong incentives for other parts of the world to pursue genetic modification.

Several religious organisations also provided comment on the potential for genetic modification to help alleviate pressures on world food supply. Interchurch Commission on Genetic Engineering [IP49] stated that vitamin A (“golden grain”) rice was one application of genetic modification that might improve the nutritional status of millions of people.

However, other submitters rejected the arguments that genetically modified foods could solve food supply problems. Pacific Institute of Resource Management [IP84], for example, suggested that there were “risks to food security through some GM disaster in agriculture affecting food production”.

Global food distribution issues

Ensuring an adequate global food supply was not the only problem identified. Some submitters considered distribution of food to those in need to be a more significant issue. ACRI [IP22] noted in its submission that, although technically the world “produces sufficient food for the moment, there is no likelihood that in the immediate future food will be readily available to those in greatest need”. The Association commented further that genetic modification technologies provided powerful tools to help address problems of world hunger and, along with other biotechnologies, they were the key to helping nations become self-sufficient in food production.

The need for equitable solutions

Interchurch Commission [IP49] noted that it was necessary to look at culturally and ethically appropriate means of addressing global nutritional deficiencies. Public Questions Committee (Methodist, Presbyterian, Churches of Christ, Quaker) [IP93] supported this view, commenting that social problems needed social answers and that genetic engineering was not the only solution for social problems. New Zealand Catholic Bishops' Conference [IP38] also dealt with ethical issues when it stated that the benefits of genetic modification should be shared fairly and equitably, and decisions should “take into account the needs of the poorest and most vulnerable”.

Submitters identified developing countries as being most in need of genetically modified crops. New Zealand Arable-Food Industry Council [IP56] provided an

example of this view, quoting from another source: “The African continent, more than any other, urgently needs agricultural biotechnology.”

ACRI [IP22] noted: “New Zealand has a role to play in sharing its biotechnology ‘know-how’ with its neighbours.”

Negative environmental effects of genetic modification

Submitters also identified potential negative environmental effects arising from the use of genetic modification, and saw these as reasons for limiting its use. For example, Pacific Institute of Resource Management [IP84] noted that genetic modification destroyed biodiversity in agriculture and that it could result in the threat of “super-weeds” or “super-pests”.

Environmental issues in relation to genetic modification are addressed in more detail in connection with Warrant item (j) (ii) (see “Areas of public interest: environmental matters”).

Although global environmental pressures might seem distant from New Zealand, ACRI [IP22] emphasised that New Zealand could not take its own comfortable situation for granted and that New Zealand’s global future could not be considered in isolation from the rest of the world.

Globalisation of resources

The increasing global mobility of people, goods, services and knowledge was a key theme that submitters commented on in relation to the use or limitation of genetic modification.

Researched Medicines Industry Association of New Zealand [IP55] noted in its submission that the pharmaceutical and biotechnological industries operated on a global scale and that the products of these industries were becoming available in the principal markets of the United States, Europe and Japan in an increasingly “synchronous” manner. NZBA [IP47] also commented on global pharmaceutical trends, noting that genetic modification offered opportunities for large-scale production of existing substances that would otherwise not be available in sufficient quantities, for example, human insulin. University of Auckland [IP16] outlined the issue of growth in international tourism and travel and the implications for New Zealand if tourists had medical conditions for which they needed access to genetically modified products for treatment. National Testing Centre [IP44] highlighted the global nature of medical treatment, noting in its submission that many new genetically modified treatments would become available overseas and New Zealand people might travel to receive treatment.

New Zealand Grocery Marketers Association [IP54] noted that the food industry was now intrinsically and irreversibly linked to international trade in food and the international marketplace and that there were few examples of large New Zealand manufacturing companies that were not part of an international network.

The globalisation of research was another trend identified by the submitters. Several submitters stressed the importance of New Zealand maintaining a critical mass of qualified researchers actively engaged at the cutting edge of new developments. Without the ability to use genetic modification techniques, New Zealand would lose valuable human resources, given the mobility of human capital.

Lincoln University [IP8] commented that international students now made up 21% of its student body, that research was undertaken from a global perspective and that, in order to remain viable, universities needed access to modern research techniques. The University stated that technologies such as genetic modification were accepted in all modern technologically oriented countries.

Global competition

Submitters identified a range of issues relating to genetic modification that had led to increasing competition in the global arena, including the “biotechnology revolution”, comparative technological advantages and competitive opportunities from avoiding genetic modification.

The “biotechnology revolution”

Several submitters referred to the “biotechnology revolution”, which was characterised by the rapid pace of change that biotechnology discoveries had generated. Submitters saw a parallel between the “biotechnology revolution” and earlier periods of rapid change in technology. New Zealand Dairy Board [IP67] noted that the science of genomics was in a position similar to that of the silicon chip 20 years ago. The fastest development had occurred in pharmaceuticals, from the first approval of a drug based on genetic modification technology in the 1980s to the “scores of GM based medicines” currently available. The Board also commented that “GM is revolutionising the food industry” and that there was “a developing convergence between the agribusiness, food, pharmaceutical and chemical industries”. Auckland Uniservices [IP23] was also of the opinion that biotechnology was now regarded as the major emerging industry of this century.

Foundation for Research, Science and Technology [IP21], describing the scale and extent of change, noted that more than 2500 companies worldwide were funded by around NZ\$8 billion annually to develop biotechnology products and that world

sales of biotechnology products exceeded NZ\$27 billion. Monsanto [IP6] noted that worldwide the total area planted out in genetically modified crops in 1999 was nearly 40 million hectares (ie, more than New Zealand's total land area).

Factors considered by submitters to be generating momentum in the biotechnology revolution included:

- the universality of science and the speed of information flows (Environmental Risk Management Authority (ERMA) [IP76])
- access to increasing amounts of DNA-sequencing information and the development of new tools with which to use this information (Institute of Molecular BioSciences, Massey University [IP15])
- the race to secure international patent rights over gene sequences of important crops and the applications of important genes (HortResearch [IP5])
- innovation, global competition and the international search for new products and markets (New Zealand Game Industry Board [IP33])
- consumer demand for genetically modified medicines, vaccines and new diagnostic tools (Otago University [IP19])
- world food security (Monsanto [IP6]).

Several submitters reinforced the economic imperatives of New Zealand being part of the “biotechnology revolution”. Auckland Uniservices [IP23] put forward an opinion that favoured active participation in biotechnology, asserting that “those countries which do not invest [in biotechnology] will be badly disadvantaged in the future”, and noted that this was especially important for countries like New Zealand that relied heavily on biological production. Auckland Uniservices considered biotechnology to be possibly the “last opportunity for the foreseeable future to participate in a major knowledge-led economic transition”.

Similarly, Dairy Board [IP67] considered genetic modification technologies to be the means of securing New Zealand's standard of living, noting that New Zealand was overwhelmingly dependent on biological products: farm, fish, forest and horticulture. The Board commented that biological exports exceeded 60% of New Zealand's export earnings and that: “There are no other exports which are growing rapidly enough to reduce that dependence.”

Comparative technological advantage

With respect to the implications for New Zealand of increasing use of genetic modification in other parts of the world, Crop and Food Research [IP4] noted that it was likely to be difficult for New Zealand's biological industries to maintain their competitive position unless they had access to technologies that were similar to

those of their competitors. Dairy Board [IP67] also noted that New Zealand needed to maintain and enhance its competitiveness in biological product exports, which it considered to be “our only major source of international competitive advantage”. The Board suggested that the major social and economic risk to New Zealand was “that the New Zealand dairy industry will be prevented from developing and using GM, while its competitors are not”.

Competitive opportunities from avoiding genetic modification

Other submitters tended to see the opportunity presented by the “biotechnology revolution” differently. Many of those who identified with organic farming, for example, saw an opportunity for New Zealand to market organic produce under a generic New Zealand “GM-free” label.

Submitters also offered comment on the competitive opportunities that might arise if New Zealand avoided genetic modification. Some submitters approached it largely in marketing terms: “As the rest of the World seems to be embracing GE technology ... New Zealand has the opportunity at this stage to reject it and thereby have a potential competitive advantage in marketing” (Royal Forest and Bird Protection Society, Marlborough Branch [IP40]). Others saw the “GM-free” option in terms of market differentiation.

Consumer responses to genetic modification

Consumer attitudes towards genetic modification, genetically modified organisms and products have been a significant factor in the use of this new technology, especially for food production.

Submitters considered three critical overseas developments as affecting how New Zealand should address genetic modification, including:

- consumer concern about genetic modification, especially for food products
- consumer demand for “clean, green”, “safe” and “natural” products
- changing global consumer preferences towards genetic modification in response to perceived price and quality benefits.

Consumer concern about genetic modification, especially food products

Several submitters highlighted consumers’ preferences about genetic modification and emphasised the importance business attached to such concerns. Submitters

saw concerns about genetic modification as particularly significant for New Zealand’s business, both locally and overseas.

Arable-Food Industry Council [IP56] stressed that New Zealand “must be in a position to respond to consumer preference in a competitive international market”. Carter Holt Harvey/Fletcher Challenge Forests [IP17] noted that “uncertainty about future consumer acceptance” in overseas forestry markets of “wood produced from New Zealand biotechnology and trees” had the potential to slow investment in genetic modification technology in the New Zealand forestry sector. Canterbury Commercial Organics Group [IP65] also talked of a “large and growing resistance to GE food production technology”. Similarly, Environment and Conservation Organisations of New Zealand [IP102] noted a “worldwide distrust” of genetic modification, particularly in agriculture and food products.

Other submitters gave more specific responses. National Beekeepers Association of New Zealand, Poverty Bay Branch [IP62] quoted a news agency report of October 2000 that described several major international brands as “distancing themselves” from having any genetically modified organisms in their products. ZESPRI International [IP46] also cited cases where global food retailers “swiftly removed and avoided” brands associated with genetic modification. Monsanto [IP6] identified “consumer concerns” behind the slow adoption of genetically modified crops. Royal Society of New Zealand [IP77b (social sciences)] also mentioned “international consumer reaction to GM foods” as an issue. All these submitters reinforced the importance of consumer reaction for marketing strategies both within New Zealand and overseas markets.

Consumer reaction to the development of health-related technological advances in vaccines and in diagnostic and treatment options is discussed under Warrant item (j) (i) (see “Areas of public interest: human health”).

Consumer demand for “safe” products

Consumer demand for “safe” or “natural” products was an additional key global development mentioned by submitters that could limit New Zealand’s use of genetic modification technology. Several submitters who supported a “clean green” image for New Zealand stressed that New Zealand could, and should, differentiate itself from the rest of the world in this developing technology. Opinions expressed included:

- to be successful as a trading nation New Zealand had to differentiate (“to decommo- ditise its production”) and being “GM-free” might be a unique opportunity to do that (National Beekeepers Association, Poverty Bay [IP62]).

- New Zealand’s remoteness presented a natural advantage: the country had the opportunity to remain free of genetically modified organisms in its agriculture and environment (Bio Dynamic Farming and Gardening Association in New Zealand [IP61]).
- New Zealand could be the “control” if the rest of the world experiments with genetic modification (Royal Forest and Bird Protection Society, Nelson/Tasman Branch [IP43])
- New Zealand should take a similar stance on genetic modification to its policy on the nuclear issue of the 1970s, and declare New Zealand “GM free” (Forest and Bird, Nelson/Tasman [IP43]).

Meat Industry Association of New Zealand [IP32], in an accompanying witness brief, commented: “perversely, genetic modification may become important for maintaining the ‘clean and green’ image [of New Zealand]. Biological solutions may come to be seen as safer than chemical solutions.”

Consumer price and quality preferences

A further global development seen as possibly affecting New Zealand’s options on genetic modification was the perceived consumer preference for cheaper or for higher quality genetically modified products.

A global consumer preference trend, identified by several submitters (including AgResearch [IP13], Game Industry Board [IP33] and Meat New Zealand [IP31]), was that wealthy consumers in Europe and North America increasingly were “looking for value, health, and nutrition from knowledge-based products”. Similarly, Monsanto [IP6] said that consumer acceptance would grow internationally as the biotechnology benefits moved from “current input (agronomic) traits to the next generation output (quality) traits which will result in improved and specialised nutritional food and feed products”. Monsanto felt that New Zealand needed to be “well placed to capitalise on biotechnology innovations as consumer acceptance of the technology grows”.

However, different markets segments (both within New Zealand and overseas) placed value on different commodities. Several submitters saw advantage in New Zealand focusing on consumers in highly developed niche markets, not low-value commodities. Some saw organic farming as catering to this specialised consumer-marketsegment.

Submitters offered differing evidence on which global trends were in New Zealand’s economic interest.

Consumer issues in relation to genetic modification are also discussed under Warrant item (j) (i) (see “Areas of public interest: human health”).

Globalisation of indigenous issues

A number of submissions referred to indigenous persons' rights and issues of genetic modification in a global context. Ngā Wāhine Tiaki o te Ao [IP64] stated that indigenous peoples internationally were resisting “biopiracy” for the purposes of genetic modification, and saw this as occurring for the benefit of “corporates”. Others referred to international agreements and discussions on indigenous peoples' rights, in particular the Convention on Biological Diversity, the “Rio Declaration”, the Mataatua Declaration and the Draft Declaration on the Rights of Indigenous Peoples. WAI 262 claimants, Ngāti Wai, Ngāti Kuri, Te Rarawa [IP89] commented that international awareness of the importance of respecting indigenous knowledge and practices “has gathered a momentum of its own”. New Zealand Institute of Patent Attorneys [IP71] noted that intellectual property rights of indigenous peoples was an area of active international debate.

Indigenous issues in relation to genetic modification are also addressed under Warrant item (f) (see “Intellectual property issues”), Warrant item (g) (see “Responsibilities under the Treaty of Waitangi”) and Warrant items (d, l) (see “International obligations and implications”).

Global legal obligations

Submitters raised issues on the global regulatory responses to genetic modification in terms of worldwide obligations and the differing national regulatory frameworks that have developed. The international legal obligations are discussed in more detail under Warrant items (d, l) (see “International obligations and implications”) and New Zealand's statutory and regulatory system is addressed under Warrant items (2, n) (see “Statutory and regulatory frameworks”).

Several submitters saw New Zealand's current regulatory framework as a factor that might limit the use of genetic modification in New Zealand for reasons of high compliance costs and more stringent regulation than some comparative systems overseas.

Restrictiveness of New Zealand's regulatory regime

Some submitters compared New Zealand's regulatory framework for genetic modification with that in other countries, in particular Australia, and noted the differences in approaches and potential impacts that might result. Biotenz [IP25] noted that Australia currently had a more accommodating approach to genetic

modification than New Zealand:

Australia ... like most other first world countries, is actively promoting inward investment in GM technology through financial assistance and support. If New Zealand does not adopt a similar approach, then we will simply become an importer of technologies and our best scientists and engineers in this area will move off-shore. The infrastructure required to support them, which will be substantial, will also be lost to New Zealand.

New Zealand Wool Board [IP30] also raised this issue and noted that if the regulatory environment in New Zealand for genetic modification was tougher than that in Australia then activities such as research would simply shift across the Tasman. The Board commented that global developments in regulatory environments would have an impact on where investment took place. It emphasised that New Zealand was a small, biologically based nation for which isolationism was not a viable economical option. This submitter considered New Zealand to be a country where people, skills, knowledge and money were now highly mobile and where future economic success would be dependent on evolving production systems in the face of ever-changing and developing world markets.

High compliance costs

NZBA [IP47] considered that ERMA's approach to risk assessment was costly and restrictive. New Zealand Transgenic Animal Users [IP45] also commented that New Zealand had high compliance costs and that the strict requirements of the Hazardous Substances and New Organisms (HSNO) legislation inhibited the ability of New Zealand researchers "to gain from and effectively partake" in global research activity. A contradiction within the existing regulatory system was identified by Wool Board [IP30]: the Board contended that there would be no economic benefit in preventing research and development of genetically modified organisms and products in New Zealand when they could be lawfully imported from other countries. On this issue, ERMA [IP76] identified a growing international inability to control the movement of goods and organisms across borders.

National strategies for technological development

Submitters commented on national strategies for biotechnology advanced by other governments and in what areas New Zealand might develop its own national strategies for dealing with biotechnology issues.

National biotechnology strategies

Several submitters commented that New Zealand lacked a national biotechnology strategy and that such a strategy was needed in order to recognise New Zealand's biodiversity, maintain its biosecurity and provide for the needs of its biotechnology industries. For example, Institute of Molecular BioSciences [IP15] observed that New Zealand must engage in genetic modification research in order to protect "our unique biodiversity" and noted that, even if New Zealand were to pursue a policy of no commercial development of genetically modified organisms, "a graduate capacity would still be crucial to interpret global trends in GM technologies and to credibly maintain New Zealand's Biosecurity" as the use and development of products derived from genetically modified organisms increased in other countries.

Some of New Zealand's closest trading partners (and biotechnology competitors) have already adopted national biotechnology strategies to guide the development of their biotechnology industries and promote national economic growth and investment. Several submitters pointed to Australia, Canada, the United Kingdom, Ireland and the United States as examples of countries whose biotechnology strategies the Commission might wish to consult. Auckland Uniservices [IP23] commented that:

Australia has a vibrant and growing biotechnology industry ... [This] has considerable significance for New Zealand, given the two countries' ... increasingly related and interdependent economies. ... the Commission should closely consider what is happening with biotechnology in Australia, and only adopt a different position ... after careful and detailed analysis.

National public education strategies

Governments are also responding with a variety of national education strategies designed to educate consumers and the public generally on the risks and benefits of genetic modification. Twenty-three submitters noted a concern about public education as an issue, implying that they saw a need for the New Zealand Government to mount a similar public education campaign. New Zealand Organisation for Rare Diseases [IP98], for example, observed that, as with earlier technological advances (such as vaccination, pasteurisation and microwave ovens), "the appropriate response is education and information".