

chapter

# 13.

Major conclusion:  
preserving opportunities

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### Introduction

1. New Zealand is fortunate to be in a situation where we can benefit from a variety of technologies. Some of the benefits derive from the selective use of genetic modification, others from existing and developing uses that do not depend on genetic modification. The Commission considers it would be unwise to pin ourselves irretrievably to any one approach at this time as this would limit our future options.
2. Genetic modification technology offers many advantages, but the field is far from fully researched and continues to develop rapidly. Global trends and future consumer preferences cannot be predicted with any confidence. It would be premature to commit all our resources to the new technology at this time.

### Our conclusion

3. There are aspects of genetic modification we consider positive and useful, and hence to have an important place in New Zealand's future in certain defined situations. We also want to maintain non-genetic modification options as effective choices. We favour a strategy of preserving opportunities and proceeding selectively with appropriate care.
4. The Commission considers that genetic modification technology should be used only in ways that are carefully managed. All opportunities to use the new technology should be seen in terms of the net contribution they will make to New Zealand. This would allow controlled use of genetic modification, the degree of control varying with the situation.
5. It is our view that an appropriate regulatory and institutional framework for the controlled use of genetic modification is already provided by the Hazardous Substances and New Organisms Act 1996 (HSNO). Nevertheless throughout the Report we have made recommendations for additional controls to make the existing system more robust. These are listed in the appropriate chapter, and numbered according to the chapter in which they were developed.

## Positions we did not choose

6. In reaching this conclusion, the Commission considered all positions, including those at each end of the spectrum.

### A New Zealand free of all genetically modified material

7. At one extreme New Zealand could become free of all genetically modified material, with no genetically modified products either in use or able to be brought into the country. We regard this option as impractical in light of all the evidence. Current medical uses would have to cease, including the use of genetically modified insulin by diabetics. The economy would contract as skilled scientists emigrated and academic and industry standards ceased to be internationally competitive. We would lose the opportunity to export the intellectual property gained through research employing genetic modification. Nor would our national border controls guarantee that no genetically modified material entered the country. Audit trail procedures and testing, which involve the use of genetic modification technology, would have to be stepped up for all imported foods and seeds, and this would ultimately raise the prices to consumers.

8. We heard of increasing consumer resistance to genetic modification technology in Europe. There was also evidence that the “clean green New Zealand” image and New Zealand’s “natural” environment are well recognised among consumers of our exports. We consider that a “clean green New Zealand” is an important image to maintain. However, although it is possible world consumer resistance may remain high, there could also be a shift towards increased tolerance of new forms of genetically modified food.

9. We consider there are advantages to be had from using genetic modification technology selectively, in a way that does not threaten New Zealand’s “clean green” image. This conforms with our preserving opportunities strategy.

10. Some submitters called for New Zealand to become 100% organic. In our opinion this subset of a “genetic modification free New Zealand” is not economically viable. Organic foods may indeed attract a premium. However, world markets are uncertain, and it is unlikely that organic exports would attract a sufficient premium in the near or medium future to offset to any degree the contractionary effect of not allowing any genetic modification in the country.

11. Premiums gained for organic exports may also diminish in the long run as they attract other countries into producing and exporting organics, increasing supply and lowering price. We note that the organic sectors of many of the economies around the world that allow genetic modification are expanding.

12. Further evidence suggested the range of organic foods that can be successfully exported from New Zealand in any volume is relatively narrow because of the shorter shelf life and increased perishability of fresh organic food. In addition, the substantial distances between New Zealand and its major export markets make it difficult to deliver products in premium condition.

13. Nevertheless we consider the organic economy important to New Zealand's future and regard it a key component of a preserving opportunities strategy.

### Unrestricted use of genetic modification

14. At the opposite end of the spectrum, we also reject the option that New Zealand allow completely unrestricted use of genetic modification technology. Unregulated use would involve taking unacceptable risks with human and environmental health and with our cultural heritage. It would also compromise consumer choice and our export market options. In the event, no submitters suggested such an approach to us.

15. In short, either of the extreme options would significantly restrict New Zealand's future choices and has the potential to impose considerable costs. All sectors of our economy should remain viable and be able to expand to their full potential within the constraints of a competitive environment.

## Preserving opportunities in research, food and medicine

### Research

16. The Commission considers that a strong research base is essential if New Zealand is to be able to pursue all possible opportunities. The acquisition and application of new knowledge, to develop new technologies and new processes, is basic to the establishment of a knowledge economy. A skilled research workforce contributes to an internationally recognised education system and the growth of the economy in diverse areas. Without a cutting-edge research capability, New Zealand's ability to develop biosecurity systems or environmental impact analyses would be limited.

17. The Commission supports the continuation of genetic modification research within the regulatory framework set out in chapter 6 (Research), as a part of New Zealand's overall research programme.

### Food

18. New Zealand imports a great variety of processed foods, many of which contain genetically modified components. It is not realistic, and would compromise

freedom of consumer choice, for such foods to be banned. In the future there will be more genetically modified foods available, with the potential to bring nutritional, health and price benefits to consumers. At the same time the content and safety of such foods must be rigorously assessed, and each product adequately labelled to ensure the well-being of consumers, and informed choice.

## Medicine

19. Genetic modification in medicine is already proving of benefit in terms of the production of drugs such as insulin, and in the diagnosis of disease or disability.

20. To regulate the use of genetically modified medicines, we recommend the enhancement of our drug approval agency, Medsafe. This will enable it to better conduct the risk assessment needed to protect our environment. For drugs and vaccines containing live genetically modified organisms, this will avoid the necessity for Environmental Risk Management Authority (ERMA) evaluation as well, and safely preserve opportunities for appropriate use.

21. Gene therapy is on the horizon with the first treatments being given to patients in New Zealand as part of international medical trials. For afflicted families this therapy promises hope and abatement of guilt; for our community it raises deep anxiety about eugenics, disability and discrimination. Toi te Taiao : the Bioethics Council will develop guidelines to help patients, health professionals and regulatory agencies manage these challenges posed by the rapidly expanding understanding of the genome.

## Preserving opportunities in crops and other field uses

22. The Commission concluded that genetic modification has a role in the development of food crops, forest trees, flowers and garden plants, subject to a range of controls designed to allow New Zealand to develop a mixed strategy of production systems. We also see that benefits might be derived from the use of genetic modification in other field uses such as pest control, bioremediation and bioreactors. However, we have adopted a careful approach, which requires each application for a genetically modified crop or field use to be treated on a case-by-case basis. This approach imposes conditions to mitigate potential risks. A range of mitigation measures has been proposed in order to reduce the risk of cross-contamination of other production systems, including the use of physical barriers and separation distances, and the adoption of sterilising technology.

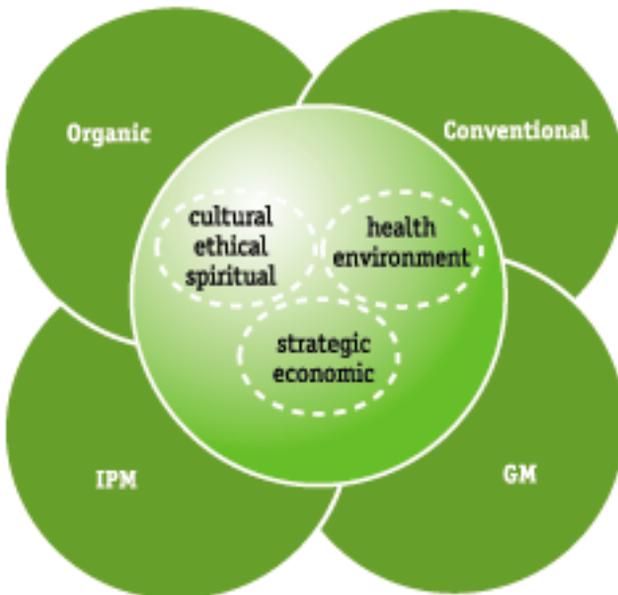
23. Four broad categories of agricultural production were presented to the Commission: genetically modified crops, conventional farming, Integrated Pest

Management (IPM) and organics. To preserve and indeed enhance our opportunities in agriculture, all these forms of production should continue to be viable.

24. The four categories are not mutually exclusive, but each has a particular place. The genetic modification of crops provides opportunities to develop new products in new markets and improve commodity crops. Conventional farming and horticulture remain major sectors of New Zealand's economy, but producers are seeking to reduce costs, improve productivity and use more sustainable techniques. IPM aims to reduce the level of chemical usage in agriculture and promote ecologically sustainable methods. Organic farming likewise focuses on a sustainable production process, to meet a growing market demand for organically grown products.

25. As noted in chapter 5 (Economic and strategic issues), all forms of agriculture are evolving. The different methods should be seen not in opposition to each other, but rather as contributing in different ways to the same overall outcome.

26. That outcome is the achievement of the three sets of goals outlined in chapters 3, 4 and 5: cultural, ethical and spiritual; environmental and health; economic and strategic. The preserving opportunities strategy makes this possible by supporting viability and strength in the different types of farming. This concept is expressed in the diagram below.



## Is compatibility possible?

27. A recommendation to preserve opportunities is only as good as the means put in place to give it effect. In this next section, therefore, the Commission addresses both the complexity and the diversity of the various strategies available to provide for compatibility between genetic modification and non-genetic modification land uses. We do not see that any one strategy, or combination of strategies, will fit every situation. Rather, implementation of our major conclusion requires a selection of strategies that ensures the release of any particular crop does not threaten the overarching goal of preserving opportunities.

29. To accomplish this, an essential change is needed to HSNO. Currently HSNO does not provide for any intermediate step between field testing (which under the Act is regarded as being in containment), and open release. Field testing means a crop is still in the process of being assessed, perhaps for environmental safety, and ERMA can require containment provisions such as fences, plastic sheet coverings or netting. “Open release” means that a new crop may be used freely without restriction: HSNO section 38 prescribes that any such release must be “without controls”.

30. This latter requirement supports an “all or nothing” approach: genetically modified crops may be anywhere or nowhere. If the Commission’s major strategy of preserving opportunities is to be effective, there needs to be a greater range of options.

31. We have therefore recommended a new category of “conditional release”, the conditions (which could include monitoring) being those necessary to achieve crop compatibility and to protect environmental and cultural values. Recommendation 6.8 from chapter 6 (Research), also set out below, is designed to achieve such a legislative change.

32. With that new general provision in place, some of the subsequent recommendations below set out specific strategies that may constitute the conditions attached to a release. We do not suggest these strategies are an exhaustive list. Others may be available, now or in the future, to preserve opportunities.

33. Nor do we suggest that every release must be with conditions. Section 38 remains in place, so that a genetically modified crop posing no threat to coexistence may proceed to open release. Others released initially with conditions may have those conditions modified or removed in the light of changing circumstances. The timely monitoring of the effects of released crops will increase the ability to make changes, withdraw approval or repair any damage quickly.

34. Recommendations 7.1, 7.3 and 7.7 have been discussed in chapter 7 and are repeated here to provide an overview of the total strategy for compatibility between genetically modified and non-genetically modified crops.

35. Recommendation 13.1, however, introduces a new element. HSNO section 6(e) directs that “economic and related benefits” are to be taken into account before any “new organism” is used, in this case a genetically modified crop. Much of the evidence we heard set out the advantage to New Zealand’s overall economic well-being of preserving the marketing advantages of our “clean green” image, as well as being open to benefits to be derived from selective use of genetic modification technology.

36. As a case study we discussed at length the kiwifruit industry, which dominates land use in the Bay of Plenty. ZESPRI International [IP46], in its submissions on behalf of the kiwifruit industry, emphasised the value of genetic modification-free kiwifruit for its marketing strategy in Europe. This strategy would be put at risk should a genetically modified version of kiwifruit be developed and grown in the same area and cross-pollinate with the established non-genetically modified variety.

37. It is to prevent such a consequence that the Commission puts forward Recommendation 13.1, whereby one of the strategies available under “conditional release” would be the exclusion of a genetically modified crop from a district where its presence would be a threat to an established industry. Some of the evidence we heard suggested that this condition would also be of value to the pip fruit and wine industries.

38. The concept of regional genetic modification-free zones was raised with the Commission. Such a proposal might be achievable under the Resource Management Act 1991. We discussed this idea extensively but saw difficulty in its implementation. First, it would require widespread acceptance in a given region before it could be put in place without impinging unduly on the rights of those who wished to avail themselves of selected genetic modification technologies. Second, and for the same reasons that we found an “all or nothing” approach to be too inflexible, a blanket ban on applications of genetic modification would be a blunt instrument when a genetically modified form of Crop A might be quite compatible with a non-genetically modified form of Crop B.

39. The Commission also discussed a more selective concept relating to the Resource Management Act provisions for different land uses. Genetically modified and non-genetically modified crops might be permitted or prohibited on a crop-by-crop and region-by-region basis. This would require a genetically modified crop to be designated as a different use from a non-genetically modified

crop of the same species. It may also be that over a period of time an aggregation of genetic modification or non-genetic modification uses became characteristic of particular regions and that identifiable regional differences emerged. These distinctions in land use might be written into regional or district plans, just as industrial use is separated from residential use. At the same time, the Commission acknowledges there are considerable practical difficulties with such proposals, which have the potential for dividing communities. Because of these difficulties the Commission is unable to reach a decision but notes the possibilities.

40. We have preferred the approach set out under recommendation 13.1 as a means of ensuring the preservation of established genetic modification-free industries such as kiwifruit. In a situation where we seek to provide for a diversity of crops, it is inevitable that there will be some restrictions on both genetic modification and non-genetic modification uses in the cause of preserving opportunities.

41. In recommendation 13.2 we consider that the Minister for the Environment should exercise the call-in powers laid down in HSNO before the first release of any genetically modified crop. We make this recommendation because the first release would be very much a watershed decision. At that point we would no longer be a genetic modification-free nation in terms of crops. Because of the significance attached to this event by many, the Commission recommends that a final overview be exercised at ministerial level.

42. Recommendation 6.13 underlines the need for adequate research funding for each of the agricultural options exercised under a preserving opportunities strategy. Research is essential for each form of agriculture to develop in a robust and responsible manner. Under-funding in any area would disadvantage that sector of our overall national strategy. The use of the word “adequate” does not suggest that the research dollar should be divided into four equal amounts. Many of the areas overlap, and some forms of research are more costly than others. But a disproportionate allocation to one area, so that others falter through lack of support, would undermine the strategy to preserve opportunities.

## Recommendations

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### ***Recommendation 6.8 (Conditional Release)***

**that the Hazardous Substances and New Organisms Act 1996 be amended to provide for a further level of approval called conditional release.**

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### ***Recommendation 13.1 (Benefit assessment)***

that the methodology for implementing section 6(e) of the Hazardous Substances and New Organisms Act 1996 be made more specific to:

- include an assessment of the economic impact the release of any genetically modified crop or organism would have on the proposed national strategy of preserving opportunities in genetically modified and unmodified agricultural systems
- allow for specified categories of genetically modified crops to be excluded from districts where their presence would be a significant threat to an established non-genetically modified crop use.

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### ***Recommendation 13.2 (First release)***

that before the controlled or open release of the first genetically modified crop, the Minister exercise the call-in powers available under section 68 of the Hazardous Substances and New Organisms Act 1996 in order to assess the likely overall economic and environmental impact on the preserving opportunities strategy.

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### ***Recommendation 7.7 (Separation distances)***

that the Ministry of Agriculture and Forestry develop an industry code of practice to ensure effective separation distances between genetically modified and unmodified crops (including those grown for seed production), such a code:

- to be established on a crop-by-crop basis
- to take into account
  - existing separation distances for seed certification in New Zealand
  - developments in international certification standards for organic farming
  - emerging strategies for coexistence between genetically modified and unmodified crops in other countries
- to identify how the costs of establishment and maintenance of buffer zones are to be borne.

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### ***Recommendation 13.3 (Communication Networks)***

that the Ministry of Agriculture and Forestry develop formalised local networks to encourage constructive dialogue and communication between farmers using different production methods, and to provide for mediation where necessary.

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### ***Recommendation 13.4 (Sterility Technology)***

that sterility technologies be one tool in the strategy to preserve opportunities, especially in the case of those genetically modified crops most likely to cross-pollinate with non-genetically modified crops in the New Zealand context (eg, brassicas, ryegrass, ornamentals).

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### ***Recommendation 7.1 (Bt Strategy)***

that prior to the release of any Bt-modified crops, the appropriate agencies develop a strategy for the use of the Bt toxin in sprays and genetically modified plants, taking into account:

- the concept of refugia
- limitations on total planted area
- home gardener use.

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### ***Recommendation 7.3 (Bees)***

that the Ministry of Agriculture and Forestry develop a strategy to allow for the continued production of genetic modification-free honey and other bee products, and to avoid cross-pollination by bees between genetically modified and modification-free crops, that takes into account both geographical factors (in terms of crop separation strategies) and differences in crop flowering times.

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### ***Recommendation 6.13 (Research)***

that public research funding be allocated to ensure organic and other sustainable agricultural systems are adequately supported.