

John Small

10 June 2016

1. I have supplied expert economic evidence on the proposed controls for GMOs. Economics is a social science, applications of which inevitably rely on facts and expertise from other domains. One of the main contributions of an economist is to organise these disparate pieces of information into a coherent framework for analysis.
2. My evidence considers the economic costs and benefits of the proposed controls, adopting the perspective of the relevant communities in Northland.
3. The cost of the controls depends heavily on the opportunities that they might cause to be foregone. In investigating these costs I have had particular regard to the agricultural and horticultural practices in Northland and the prospects for GMOs to add value to these sectors over the 10 year life of the Plan.
4. The benefits depend primarily on the ability of Northland residents to do one or both of two things:
 - a. Capture a financial gain through GMO-free status, either in the form of a price premium or through preferential access to markets; or
 - b. Avoid financial costs, such as might arising from product contamination or cross-fertilisation between GMO and other crops.
5. Both of these sides of the analysis also have an important time dimension. The Plan endures for 10 years though it can be changed before that time if there are net benefits from doing so. This limits the opportunity costs of the proposed controls because if new GMOs emerge that would add value their use will be at most delayed rather than precluded.
6. Time is also important for the development of new GMOs. These are rarely brought to marketable standard within a decade of starting development. Thus, unless there is a GMO that is already in development and showing significant promise for Northland, there are unlikely to be any material opportunity costs associated with the proposed controls. Opponents to the proposal have not nominated any such GMO.
7. My evidence has been very clear about four facts that heavily influenced my analysis.
8. **Fact 1: Uncertainty.** I said that "*there is considerable scientific uncertainty over the costs and benefits arising from outdoor cultivation of GMOs*". This is obviously true for those GMOs yet to be developed or commercialised for application under New Zealand conditions. However it also applies to existing commercial GMOs as the recent decisions to extend bans on GMO cultivation by Germany, France and Scotland demonstrate.

9. Professor Heinemann has provided detailed evidence on scientific uncertainty regarding GMOs and I have relied on his work. However while genetics and more generally the biological sciences are obviously relevant to assessing the costs and benefits of outdoor GMO cultivation, economic factors are also relevant. Commercial growers of plants do not just care about the cost of production and the attributes of the plants they might choose to grow; they also care about the preferences of buyers, because those preferences affect both the market value of the output and the ease with which it can be sold.
10. **Fact 2: Opportunity Cost.** I said that *“at this point there are no GMOs that are both ready for commercial release and experiencing demand from growers in this part of New Zealand”*. I have been noting this fact since the Hastings hearing on similar plan provisions in May 2015 and discussed it in detail in my primary evidence.
11. Those opposing the Proposal are ideally placed to provide documentary evidence of GMOs that are ready for commercial release and for which there is demand. None of them did so.
12. **Fact 3: Supplier Views.** I said that *“major exporters of primary products in New Zealand perceive a market benefit from this country’s GM-free status and view the potential for GM contamination arising from a food-related release as a serious commercial risk, and are therefore opposed to the outdoor release of GMOs”*. I could (and perhaps should) also have cited smaller scale producers on this point because *any* such preference by exporters is very telling indeed. Commercial suppliers have strong incentives to understand buyer preferences because buyers ultimately provide all of the money that keeps them in business.
13. From an economic standpoint, the views of those who might use or be affected by a GMO release are therefore very important and they are clearly aligned with the Proposal. Fonterra sells to customers all over the world and invests in the Pastoral Genomics research consortium. My primary evidence quoted Fonterra as saying *“Fonterra does not support field trials of GMOs in New Zealand at this time”* so we can safely assume that it would feel the same way about general outdoor release.
14. **Fact 4: Timing and Flexibility.** I said *“the proposed measures are time-limited and can be changed in the event that a cost-benefit analysis supports change”*. This is a critical point for an economic analysis for two reasons. First, it places a limit on the time-horizon over which we need to consider costs and benefits. Since we expect that the plan will be revised within 10 years we should focus on events that will or might happen within that period of time. Secondly, the availability of a process to make a plan change acts as a safety valve which places a limit on the total costs of the Proposal.
15. This latter point is particularly important because of (a) ongoing scientific efforts to develop GMOs that could yet prove capable of delivering net benefits and (b) scientific and commercial uncertainty over the results of those efforts and particularly their timing. For example, if a new GMO was to emerge after say 4 years and it would deliver *net* benefits for Northland if approved for outdoor release, then the plan change mechanism can be used to ensure those net benefits are received. In that situation, the

cost of the Proposal would be limited to the cost of changing the plan to accommodate the new discovery.

16. The reason I emphasise these four facts is that they permit one to draw quite clear conclusions about whether the Proposal is likely to offer net benefits to the Northland region. In particular they tell us that:
 - a. The proposal does not impose material costs in the form of valuable opportunities foregone (opportunity costs);
 - b. The proposal is aligned with market preferences as interpreted by major customer-facing organisations (supplier views);
 - c. We don't know how the science will evolve and it might be that in the future a GMO can be shown to have net benefits for Northland (uncertainty); but
 - d. In that event, the plan can be varied to avoid it blocking valuable developments and the costs of doing so are limited (timing and flexibility).
17. In my opinion, these are sufficient grounds to approve the Proposal.