



# If GM is the Answer, What exactly was the Question?

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Sustainability Council

# Sustainability Council



- Sustainability Council is an independent charitable trust
- Focuses on: climate change, genetic modification, emerging tech and biosecurity
- Founded by late Sir Peter Elworthy
- Chaired by Professor Garth Cooper
- Executive Director, Simon Terry

# So what is the Question?

“How can we farm sustainably and profitably”

Zac Hanley, Vialactia

~~Will GM succeed in improving biosecurity  
... enough to cover its development costs  
... and meet existing regulatory hurdles  
... and allow sustainability certification~~

# Risk 1: Non-Delivery

- History of GM food crops is of modest gains
- Crop varieties commercially available still remain focused on limiting harvest losses
  - Just a different way to kill insects or weeds
- Delivery is way behind on promises re translating other concepts to cultivars
  - Science has proven more difficult to commercialise than originally thought
- Risk that benefits of GM trees will fail to meet expectations decisions are based on

## Risk 2: Regulatory

- All outdoor use of GMOs in NZ subject to a net benefit test set in HSNO Act
- Use of GMOs in outdoors not gone beyond field trial stage in the decade since HSNO modified to facilitate outdoor applications
- No applications been made for GM crops
- Government stated in November that HSNO will not be changed to weaken GMO assurances
- Politics of that unlikely to change

# Will food producers allow it?

*"It is important that a decision to proceed with field testing is based on a clear understanding of the risk-benefit implications of any change to perceptions of New Zealand's GM status for the country as a whole.*

*...*

- o - How the "clean and green" construct is interpreted or valued by customers for New Zealand products;*
- o - How it interacts with other sales drivers, such as quality and price;*
- What role New Zealand's GM-free status plays in this overall construct ."*

Fonterra submission, Oct 2010 re Scion pine trial

## Risk 3: Market Standards

- Market standards can define access and price premiums just as strongly as regulation
- NZ has branding advantage with nearly all forest exports from sustainable plantations
- Use of GM would tend to undercut the scope of claims that can be made about products so long as GM use not accepted into sustainable forestry certification programmes

# FSC not moving “in next decade”

- The Forest Stewardship Council (FSC) provides certification for sustainable forestry in NZ
- Its ban on forest companies using GM would be very difficult to change any time soon
  - Is locked in at principles level in international standard
- Viewed as not likely to change in next decade by those close to process



How to Respond?

# What business are you in?

- Forestry
- Fibre/wood
- Fibre/wood and sequestration
- Fibre/timber and environmental services

Really in land management

... over long crop cycles

... when uncertainty over regulation is high

# Beyond specific projections

- Conventional business analysis not as useful in the face of:
  - Such long time periods when investment is locked in
  - High levels of regulatory uncertainty
- Investment needs to be guided by strategic level considerations
  - Paths not reliant on specific projections

# Two Megatrends

- Sustainability/Gatekeeper Effect  
Consumer demand for Sustainability criteria to be met – retailers acting on their behalf to screen products
- Climate Change/Regulation Change  
Coming increased concern to preserve carbon sinks – regulatory uncertainty over methods and cost distribution

# Sustainability the 'new black'

- Trade NZ recently employed UK consultants to evaluate retailer responses to sustainability concerns. Found:
  - Deep action on sustainability issues now a norm for UK food retailers
  - Trend fast going global for high value food markets, and into non-food sectors
- Selecting products to stock on criteria from carbon to water content ... and use of GM

# Will GM trees follow GM food?

*“This paper aims to demonstrate the important lessons to be learnt from the Genetically Modified (GM) food 'debate' ... it is **concluded that the commercialisation of GM trees is likely to be as problematic as the commercialisation of GM crops has been in certain parts of the world**”*

*GM technology in forestry: lessons from the GM food 'debate'*  
Clare Hall, International Journal of Biotechnology

# How has GM food gone?

16 years after commercialisation of GM crops, it remains a narrowly applied technology:

- Four crops account for over 99% of acreage in GMOs – soy, corn, cotton, canola
- Also narrow geographically – 83% a story of the Americas. The US, Brazil, Argentina and Canada account for 83% of acreage (Clive James, 2012)
- Principally for animal feed (around 70%) and processed food where GM content unlabeled

# GM shunned in Europe

- 1996-2010: *“The wider picture is of declining support across many of the EU Member States – on average opponents outnumber supporters by three to one, and in no country is there a majority of supporters”* European Commission, Eurobarometer, 2010
- Just 115,000 acres in GM crops in all of Europe
  - 99.9% is one corn variety, 85% of that grown in Spain
- Some EU countries have all but banned GM crops
- Other high value markets to show similar resistance include Japan and South Korea

# Why weigh costs and benefits

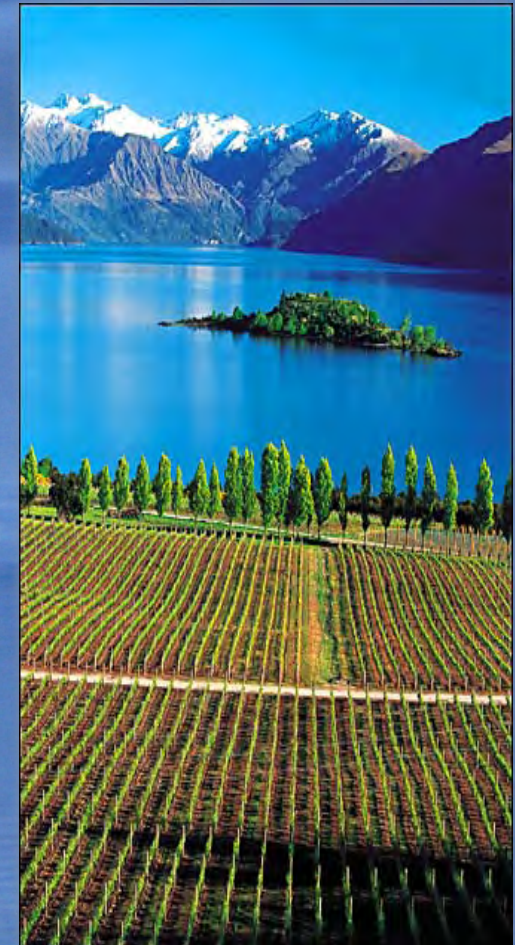
- NZ meat exports worth \$5 billion a year
- 35% of those sales by value to Europe
- If all that \$1,800 million worth of product was supplied from farms either growing GM grass or deemed to be contaminated by it, and a price premium for non-GM as small as 10% were to open up, this represents an opportunity cost of \$180 million a year
- That \$180 million is greater than the total benefits Pastoral Genomics expects from the best of its GM cultivars in any year (\$155 mill)

# HSNO not barrier to innovation

- HSNO not the reason no GM forage trials in NZ
- Is because GM developers could not convince all pastoral farmer bodies to support an EPA application
- And for good reason. Pastoral Genomics planned application to trial GM grasses in 2010 would have failed net benefit test on information then prepared
- Trials went to Australia instead so research continued nonetheless
- MFE says HSNO Act not a barrier to innovation

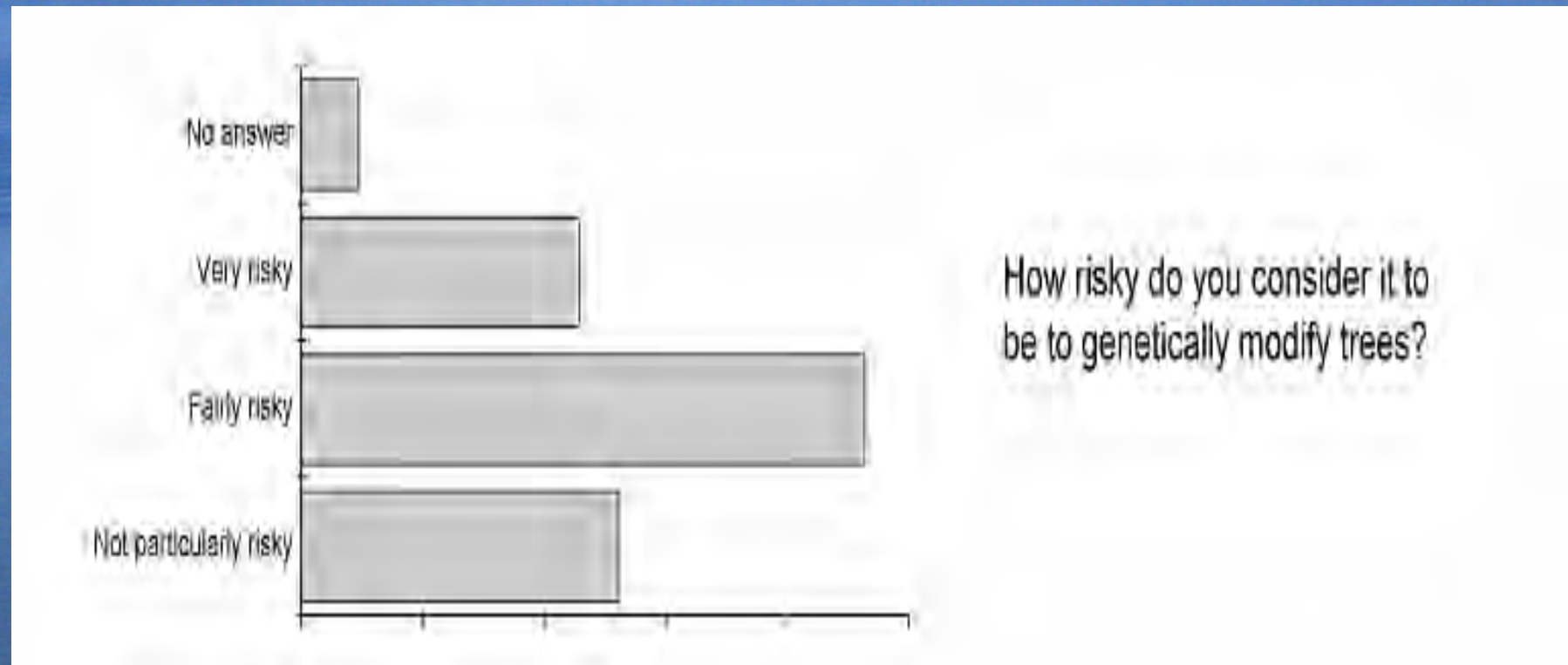
# Brand consistency

- Given overseas perceptions, at a strategic level would be brand inconsistent for NZ to take the GM route – Fonterra's concern
- It would also invite scrutiny of New Zealand environmental record generally – which is none too flash
- So rather than just erode brand value, it could trigger a collapse of key perceptions consumers hold about Brand NZ and/or products



# Public perceptions of GM trees

Very few publicly available surveys – more research required. One example from Sweden:



# Gatekeeper effect and GM trees

- Systems already in place for gatekeeper effect to act on forest products
- Sustainability issues surrounding indigenous forests have set up chain of custody procedures and links to consumer
- If GM remains a major consumer concern, then gatekeepers likely to limit market access and opportunities to secure price premiums

# The Climate Elephant

- Already too much carbon (greenhouse gases) in the atmosphere on any reasonable risk basis
- When humanity comes to terms with this, will place much more importance on carbon sinks
- An opportunity for forestry sector to be part of the solution - by sucking down excess carbon – but also presents risks ...

# Will there be harvesting limits?

- Serious action is likely to come well before the harvesting of anything that was planted today
- Game then turns from emissions offsetting, to desperation to draw down carbon and preserve existing forests
- Emissions pricing and/or regulation could unfold in ways that make harvesting all but impossible – or large areas not harvestable
- Driver may be NZ's deemed carbon debt as much as concerns over particular sinks

# Foresight could still pay

- Degree of regulatory risk is very high
- Nature of climate response actually required is every bit like a wartime mobilisation
- At point is such a response, harvesting, planting and the nature and form of the ecological services to be provided would become subject to a high degree of government dictate
- May however still use market instruments to drive outcomes – meaning that anticipating future needs today would still pay

# A more useful Question

What can I do today to hedge my forestry investment against events that could radically alter today's expectations?

- Putting the detail aside, what strategic benefits does a GM tree offer versus other actions I could spend equivalent effort on, and what strategic risks does it present?

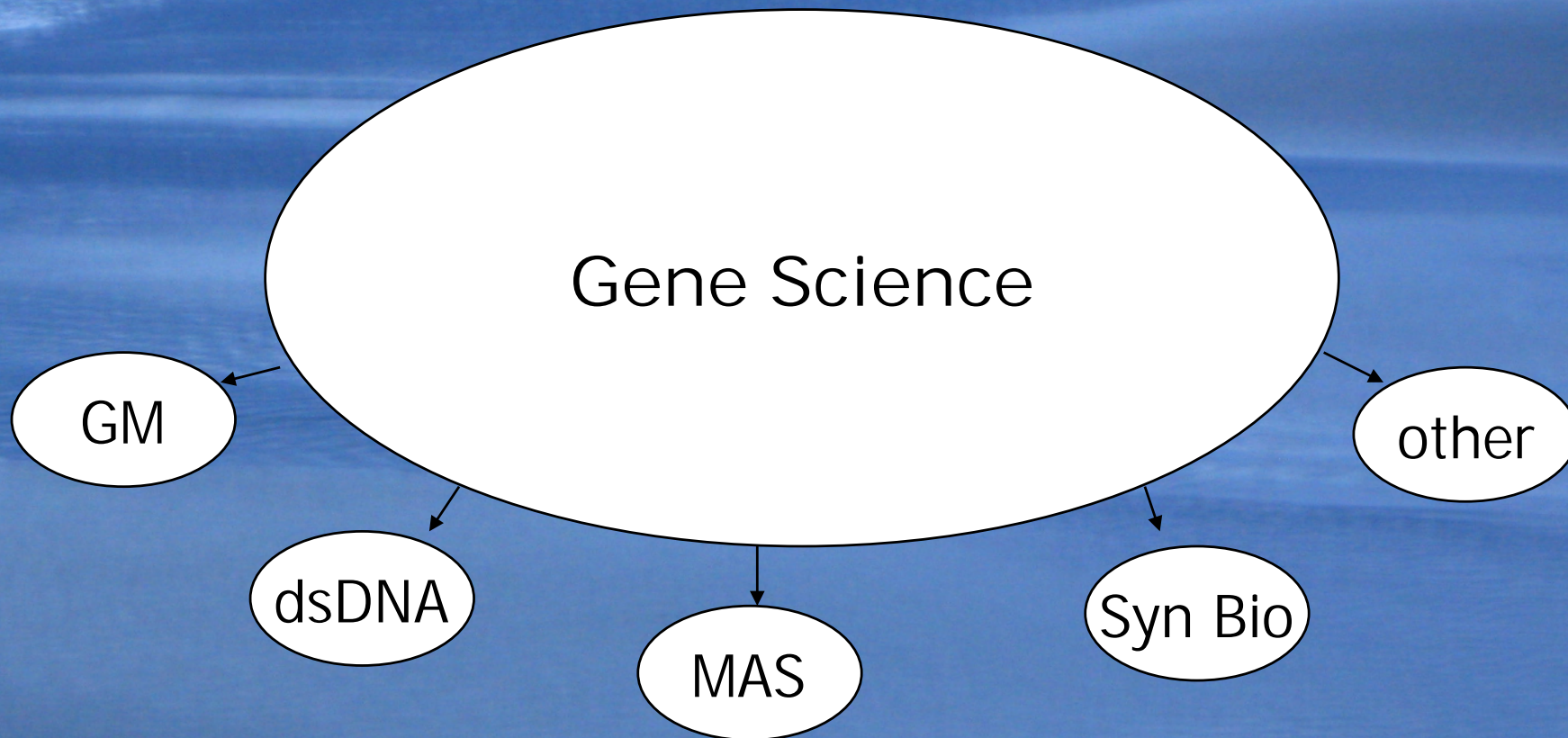
# Response 1: Avoid GURTs

- GURTs – genetic use restriction technology
  - Also dubbed “terminator”, “suicide trees”
- Do not want GURTs if climate change response strong and governments looking for semi-permanent forests - penalising owners for any drop in forest’s carbon storage
- In any case, at the public level, the issues raised by GM are compounded by GURTs

## 2: MAS not market troubled

- GM is not a unique route to virtually any outcome
  - It is just one of the applied tools to have spun off from gene science
- Marker Assisted Selection (MAS) is another option, yet the processes it relies on to create a new plant variety are the same as conventional breeders have long relied on
- It does not trigger any of the sustainability or regulatory issues that are associated with GM

# GM just one technique



# Response 3: Biodiverse Planting

- Climate change poses threats that can not be fully anticipated in a GM tree
- Can hedge against these generally through biodiverse planting (within and across species)
- If ecological services become monetised, then there will be biodiversity credits in permanent forests – like carbon credits
- GM exacerbates current risks stemming from monoculture
- Biodiverse planting reduces risk all round