

GE Free NZ in Food and Environment

ERMA200706 and ERMA200792
Arabidopsis thaliana

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What is the purpose?

- * What are the vector systems used?
- * What other Organisms are being engineered from these seeds?
- * What “new” plant varieties are being engineered?
- * What is the purpose?



Why we need to know the Organism?


- * To understand how to evaluate its impact and if there is any other way to achieve this outcome.
- * To be able to compare what exists today.
- * Can cross breeding of non-GE parent lines achieve the same ends?
- * To trace escape into environment
 - * From Laboratory
 - * Breach of facility /Flood / Underground water
 - * For scientific and public evaluation and assessment
 - * Evaluate alternatives, ethical costs and benefits
 - * HSNO Act requirements on a case-by –case basis.



Regulation requirements under HSNO

- * Scientific assessment or public evaluation of organism description
 - *Section 40
 - *Section 11
- * Consideration of Alternative safer options
 - *Section 44A.
- * Maori consultation
 - *Section 8
- * Risks Cost and benefits
- * Community and Health consideration
- * Economic considerations
 - *Section 40

How can a non-GM grower control floods?



seed and pods flow
from canola paddock



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Why is this relevant?

- * Informed and scientific debate on risks and benefits to New Zealand community.
- * Diagnostic tools to trace source of outbreak
- * Biosecurity risk contained to site
- * Close proximity to horticultural economy.
- * Taxpayer and public are carrying liability and risk.



Foot and Mouth Outbreak UK

- * 16km down stream extending to 5 farms.
- * Close down of all farm operations in South of England and mass destruction of animals.
- * Britain placed on high alert affecting all exports.
- * Costs to rectify around \$30NZ million



Escape GE virus traced to

* Pirbright Contained Laboratory Facility.

(Institute of Animal Health, Meriel, Stabilitech Ltd)..

- * Breach of facility containment protocols,
- * Virus improperly chemically inactivated.
- * Cracks in drains and effluent sump
- * Manhole effluent overflow aerosol and surface water
- * Virus release from overflow to lagoon
- * Contaminated Soil removed off site
- * Improper management of staff movements
- * All hazards spread from exposure to soil, air and water.

State of perimeter fence November 2007



“MAF is still investigating the cause of these holes, and has not ruled out the possibility these were man-made for publicity purposes”.

Rabbit hole





Hole dug under fence

19 GM *Pinus radiata* cut down, 17 expressing reproductive altering genes and 2 controls

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Police launched an investigation following the break-in at the Scion GM trees site.



Security?



* Trial of GE trees 2011



* Trial of GE trees 2012



Laboratory Breach of GE *Arabidopsis thaliana*



- * Breach of PC2 controls.
- * Waste water drains into storm water system
- * Drain mesh larger than small seeds,
- * Broken seal around drain
- * Extraction fan sucked up seeds
- * Staff inadequately trained
- * Entry of unauthorised persons
- * Sloppy laboratory maintenance

Outside Plant and Food Laboratory containment



Stem rot in GM Brassica.

7/03/08



The roots of the wilted Bt plants had symptoms of rot,
The fungus is soil borne may infest the succeeding crops.
The fungus is also likely to spread through irrigation water to neighboring fields.

A new disease not seen until now

Qayum A. and Sakkhari K., (2007) Bt Cotton in Andhra Pradesh a three year assessment (Pg 30)



Discovered Breach of flowering kale



Photograph
Steffan Browning

GM flowering Kale with fully developed seed pod - 22/12/08



The NZ Law Commission (2002) findings on GMO's

- * It is difficult to estimate the level of risk posed by GMO's;
- * It is difficult to assess the magnitude of the potential damage that could be caused;
- * GMO's have the potential to create catastrophic levels of harm;
- * GMO's have the potential to cause irreversible damage;
- * Some of the potential negative effects of GMOs will likely manifest in the long term, be diffuse in nature”



Governance

- * Multiple Organisations. This is not feasible.
- * lack of accountability
- * One independent management and governance Board from 1 Organisation.
- * Dedicated trained staff
- * Independent member of an NGO on the Board.



Training

- * Expert training for the Board and Staff covering past Biosecurity breaches and future potential hazards
- * Only people who are directly involved with the experiment, no partners or outside persons, should be allowed to enter the premises.
- * An Independent NGO regularly monitor on a random basis.



Waste Material

- * A dedicated holding wastewater pit;
 - * Irradiated and filtered through a mesh twice as small as the seed
 - * Any sediment autoclaved
 - * Disposal in a Biosecurity designated area.
- * Regular inspection and cleaning of the outside surrounding area
- * At the sign of any breach the whole programme is to be shut down.



Facility Security

- * Sealed glasshouse with glass and concrete are fully secure.
- * A double entrance door, which is hermetically sealed.
- * All foot wear and protective clothing is to be removed before exiting the outdoor area.
- * No facility is to be built where there is danger of Earthquake damage.



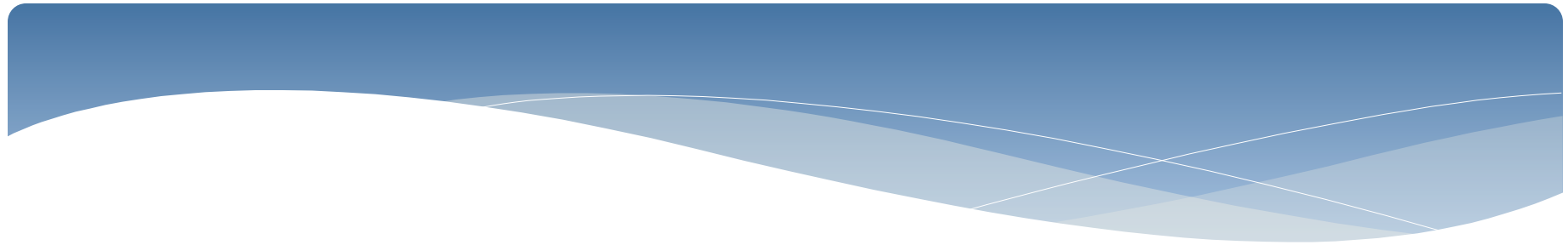
Lack of benefit to NZ.

- * The lack of any results of what the last 10 years of GE experiments has added to New Zealand scientific knowledge causes us to question whether this is in truth a benefit to New Zealand science or a collaborative overseas corporate enterprise that could damage New Zealand's hard earned scientific endeavours over the years.
- * Consideration of alternative methods should be examined before this experiment should proceed.



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Thank you for listening



- * Final report on potential breaches of biosecurity at the Pirbright site 2007 h
<http://www.hse.gov.uk/news/archive/07aug/finalreport.pdf>
- * Qayum A. and Sakkhari K., (2007) Bt Cotton in Andhra Pradesh a three year assessment (Pg 30)