

## **Submission to the Productivity Commission on 'Regulation of Agriculture'**

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In my capacity as Professor of Agricultural Biotechnology at Murdoch University, and representative on the Ausbiotech WA Committee, I make the following submissions to the Commission:

### **1. Support for the Repeal of the WA GM Crops Free Areas Act, and repeal of similar acts in other States and Territories**

I have been involved in the development and science behind genetically modified crops since 1979, and have seen its roll-out worldwide since 1996 as the most rapidly embraced technology in farming ever.

The international benefit of GM crops (1996-2013, Brookes and Barfoot, PG Economics 2015) was:

- Increased crop production valued at \$133 billion
- Reduced use of chemical pesticides by 37%
- Increased crop yields by 22%
- Reduction in CO<sub>2</sub> emissions, and alleviation of many poor farmers from poverty

The Australian benefit from GM crops (1996-2015, Brookes, PG Economics, 2016)

- Australian cotton and canola farmers: benefit \$1.37 billion
- Increase in farm income from GM canola: \$98.9 million
- Increased production of canola: 226,000 tonnes
- 23% reduction in insecticide and herbicide use
- Major benefits to the environment and to the health of farm worker

These benefits are just the tip of the iceberg of what is in the pipeline, with the emphasis changing from crop production traits to traits which benefit human health.

The State and Commonwealth Governments should not be swayed by organised letter writing of a few vociferous people with their own agendas (eg vested interest in organic production) or the mis-information that is widely peddled on the web and by the press.

As agreed by all major scientific organisations, including those in the EU, GM food is in fact marginally safer than conventional bred food, and more so than organic food.

WA farmers will only be able to compete in the world market if they use the best technologies available, and that certainly includes GM crops. There are so many opportunities that it would be a really retrograde step to continue the State GM Crops Free Areas Act and allow the possibility that this Act may be used for political purposes in the future to prevent implementation of the powerful GM technologies that can so benefit WA growers.

This is highlighted in the recently published report on 'Smart farming, an Inquiry into Agricultural Innovation' (House of Representatives, Standing Committee on Agriculture and Industry, May 2016), in which the Committee strongly urged the Australian Government to pursue all available options to achieve a nationally

consistent approach to the approval for commercial use of gene technology, **including the phase out of state-based moratoria of the cultivation of GM products.** That is, it recommended removal of state moratoria, and the introduction of a GM threshold in organic standards.

**Repeal of State-based moratoria on GM Crops Free Areas Act is vital** – it will help ensure that Australia's farmers can use the best technologies both for production and to benefit the environment.

I am happy to provide any additional information.

## **2. The definition of what is a GMO is now out of date and needs revising**

First I provide evidence that almost all the food we eat is genetically modified in some way; second I argue that regulating the **method** of modification is wrong – it is the properties of the food product, however produced that should be regulated, with the same safety and environmental regulations. That includes products of all forms of 'conventional' plant breeding, mutation breeding, GMOs and organic produce.

### **Almost all food we eat is genetically modified**

Here are a few facts:

- All wheat grown in Australia is genetically modified – it contains large segments of rye chromosomes introduced by cytogenetic means (translocation) with genes for resistance to fungal pathogens, and many others.
- Triticale is an artificially generated hybrid between wheat and rye, generated by doubling of chromosomes using colchicine. It does not occur in nature.
- Mutation breeding, either using gamma irradiation or chemical mutagens, creates many different breaks and changes on a plant's DNA, most of which are completely unknown – this is 'Atomic Gardening'. But there is no opposition, no labelling, no protesters, no fear. Accepted for organic cultivation and the EU.
- Fusing two complete sets of genomes of incompatible plant species by protoplast fusion, and regeneration of novel hybrid plants is not regarded as GM!

**So here we have a scientific paradox:**

**If imprecise genetic manipulation technologies are used (like plant breeding, cytogenetics, mutation breeding or cell fusion) there is no regulatory oversight; however when single genes are transferred, based on in depth scientific knowledge of the basis of a trait, then it is highly regulated. This does not make scientific sense!**

I submit that virtually all food crops are genetically manipulated: GM technology is just another more precise tool for plant breeders. What is and is not classified as GM is simply a matter of definition, and the definition of GMOs is outdated, and is in severe need of review. All major scientific studies conclude GM food is safe, indeed safer than conventional or organic produce.

We also now have 20 years' experience of the safe use of GM crops – now grown on 10% of the world's arable land. The vast majority of farmers want to use the best technologies: co-existence of all forms of farming can readily be achieved. The world will need 70% more food by 2050 to meet demand, with less land, fewer resources and a changing climate. GM technology is a vital part of increasing food production and quality in a sustainable manner: this will also help preserve biodiversity for future generations.

**Future food security requires two things: the application and dissemination of technology, and the implementation of sensible government policies. The present policies that prevent many advances in crop production, their improvement for human health and environmental benefits, are in severe need of amendment to provide a level playing field based on the properties of the final product, and not on how it was generated.**

Yours sincerely

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