

# **A Review of the *Independent Review of the South Australian GM Food Crop Moratorium* and Fourteen Alternative Findings**

Prepared by Dr John Paull, March 2019

## **Abstract**

The present review of the *Independent Review of the South Australian GM Food Crop Moratorium* (Anderson, 2019) reveals that the so-called *Independent Review* is not independent at all and thus it falls at the first hurdle. Kym Anderson is a long term vocal advocate of genetically modified crops and has expressed such views regularly over the past two decades. The *Independent Review* was commissioned by the South Australian Minister for Primary Industries and Regional Development. There were 216 public submissions, of these, 78% (n=168) were for retaining the existing Moratorium, 18% (n=39) were for scrapping the Moratorium, and 4% (n=8) were undecided. 100% of the food available in Australian supermarkets is GM-free which mirrors the sentiments of Australian consumers, which are against GM-food; and Australian supermarkets are all aware of such sentiments. South Australia (SA) has a 'clean and green' image. This image serves SA well for food production, trade, tourism, education and migration. GMOs would damage SA's clean and green and smart image and can thereby be economically detrimental to the state. The *Independent Review* proposes that GM canola is the sole candidate for uptake were the GM Moratorium to be scrapped. The GM canolas (Round-up ready, TT) proposed for SA are herbicide-dependent crops relying on regimes of multiple toxic herbicide applications. Glyphosate is a carcinogen and triazine is banned in Europe. These are chemicals that are dangerous to the health and wellbeing of animals, including humans, and the environment, and prescribing their use can be expected to increase SA's health costs and future environmental clean-up costs. GM agriculture is an example of privatising the profits and socialising the costs. Australia is the world leader in organic agriculture and accounts for 51% of the world's certified organic hectares, and, of this, South Australia is the leading organics state in Australia accounting for 40% of Australia's certified organic hectares (and 20% of the world's certified organic hectares). Organic produce sells at a price premium - usually in the range of 10% and 110% (compared to non-organic). This contrasts with GM canola which sells at a price penalty of 7%. These price premiums and price penalties reflect market sentiment - what the market wants and what the market does not want. The GM Moratorium has a social licence and is serving SA well and should be maintained on economic and social grounds. The *Independent Review* should be rejected.

## **The *Independent Review* is not independent**

The author of the *Independent Review* is a vocal, long term and consistent advocate and proponent of GM crops, dating back over two decades. His extreme views were known or should have been known to the South Australian Government at the time of the appointment of Kym Anderson as reviewer. The known partisanship will always cast a question mark over the credibility of the *Independent Review* - even before it was submitted.

The perceived bias and the vested interest of the so-called 'independent reviewer' in supporting two decades of his own published opinions and analyses should have been sufficient to exclude Kym Anderson from consideration as an 'independent reviewer' and, failing that, ought to have been sufficient cause for him to exclude himself.

The views of the *Independent Review* are reflected in previous publications of the so called 'independent reviewer', for example:

- Anderson, K., & Nielsen, C. P. (2001). GMOs, Trade Policy, and Welfare in Rich and Poor Countries. In S. Maskus & J. D. Wilson (Eds.), *Quantifying the Impact of Technical Barriers to Trade: Can it be Done?* Ann Arbor, MI: University of Michigan Press.
- Anderson, K., & Jackson, L. A. (2004). GM Food Crop Technology: Implications for Sub-Saharan Africa. *Centre for Economic Policy Research (CEPR), Discussion Paper No. 4490*, 1-29.
- Anderson, K., Damania, R., & Jackson, L. A. (2004). Trade, Standards, and the Political Economy of Genetically Modified Food. *World Bank Policy Research Working Paper, WPS 3395*, 1-30.
- Anderson, K., Jackson, L. A., & Nielsen, C. P. (2005). Genetically Modified Rice Adoption: Implications for Welfare and Poverty Alleviation. *Journal of Economic Integration*, 20(4), 771-788.

**Finding 1: The *Independent Review* is not independent at all. The *Independent Review* is written by a vocal and long term advocate of GMOs and GM-crops, and in addition it contains errors of fact from the outset (see Finding 2) and it should be disregarded in its entirety.**

## The majority of submissions supported retaining the SA GM Moratorium

The *Independent Review* states that “Community attitudes to the moratorium were captured in the 216 submissions received by the Reviewer” (Anderson, 2019, p.xii).

Of 216 public submissions, 78% (n=168) were for retaining the existing Moratorium, 18% (n=39) were for scrapping the Moratorium, and 4% (n=8) were undecided (Anderson, 2019, p.xii) (see Figure 1 below).

Of these 216 submissions, only 45 appear on the PIRSA web site (pir.sa.gov.au). Of these selected 45 submissions made available on-the-web, the majority are undated. Of the 45 submissions made available on-the-web, 36% (n=16) appear to be for retaining the Moratorium, 60% (n=27) for scrapping it, and 4% (n=2) are indeterminate. This appears to be a biased selection of the submissions and without any declared rationale for that bias.

Despite the data that the *Independent Review* reports, the false claim is made therein that: “the majority of submissions ... favour the immediate removal of South Australia’s moratorium on GM crop production and transport (Finding 2.3)” (Anderson, 2019, p.xii). This is a false and misleading claim which is entirely inconsistent with the data (see Figure 1 below).

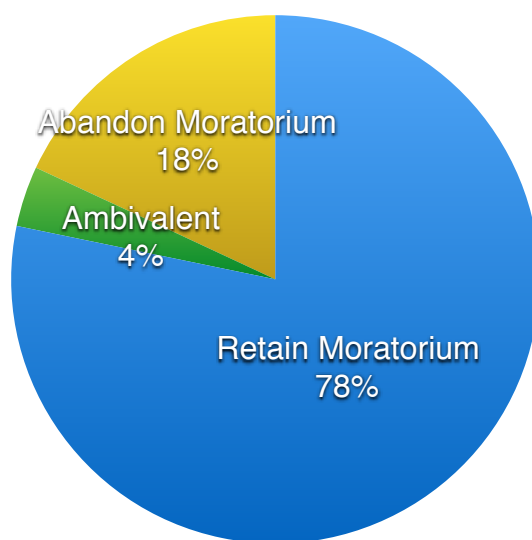


Figure 1. There were 216 submissions to the Independent Review, of these, 78% (n=168) were for retaining the existing GM Moratorium, 18% (n=39) were for scrapping the GM Moratorium, and 4% (n=8) were undecided (author's graph; data source: Anderson, 2019).

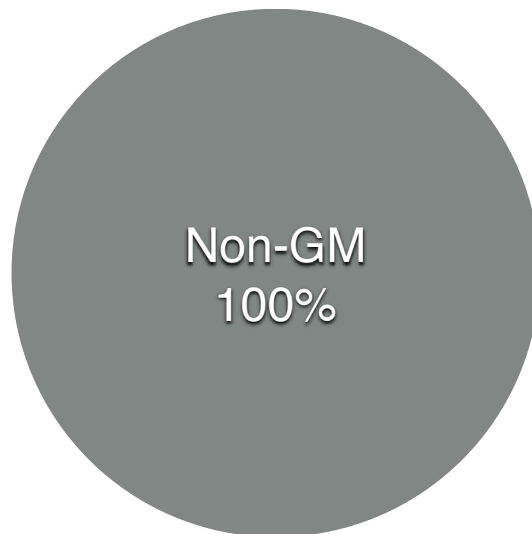
**Finding 2: The majority (78%) of submissions supported retaining the existing SA GM Moratorium. The *Independent Review* falsely reports the contrary.**

## **There are no GM foods on Australian supermarket shelves**

In Australia, food with GM ingredients must be labelled as such. The result is that there are no such food items on Australian supermarket shelves (Figure 2).

This is a reflection of consumer sentiment in Australia - consumers do not want to buy or eat GM foods - they have been characterised as ' Frankenfoods'. It also reflects a recognition by Australian supermarket chains that a GM label on a food item would spell its death knell.

The consequence of this is that markets for GM produce must be sought overseas. GM foods are sold into markets that lack GM-labelling requirements, markets where the consumers are left in the dark regarding the provenance of ingredients. Why would SA consider facilitating such a deceitful trick on foreign consumers? There may be some economic karmic flow-back from pursuing such a route.



**Figure 2: The food offerings on Australian supermarket shelves are 100% non-GM.**

**Finding 3: Australian supermarkets do not stock GM-foods because they are aware that Australian consumers have rejected such ' Frankenfoods'.**

## South Australia enjoys a clean and green image

SA enjoys an enviable reputation as a clean and green and smart place to be doing business. It has a reputation that many countries and regions around the world can admire and aspire to (Figure 3).

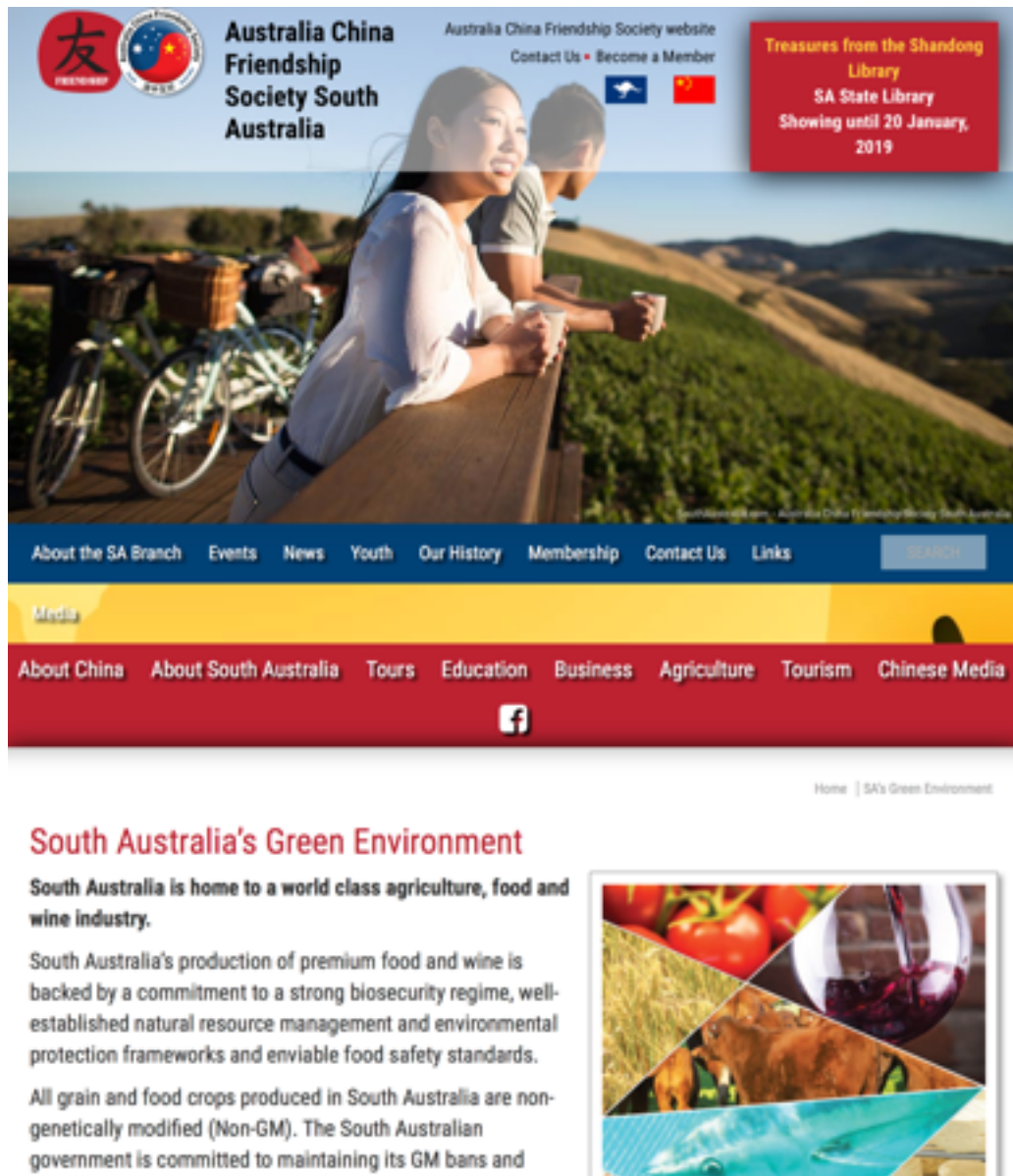


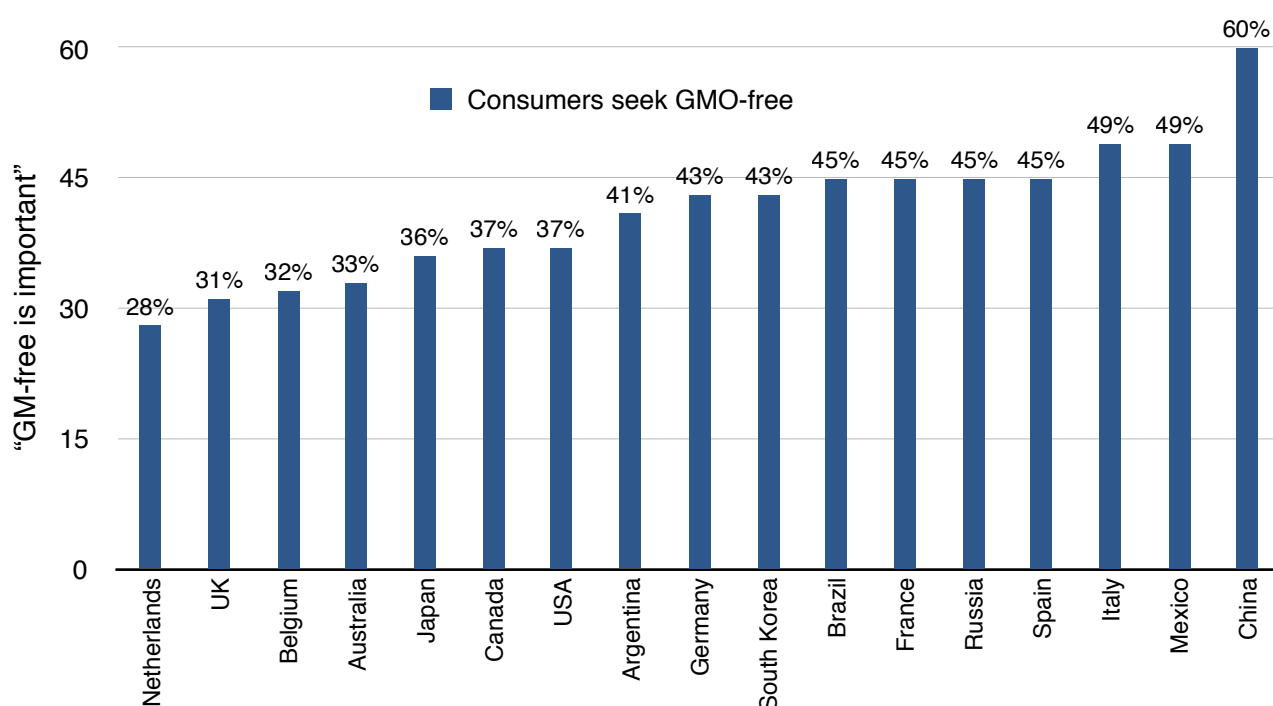
Figure 3: SA is known around the world for its clean and green and smart image (source: [australiachinafriendship.com.au/south-australias-green-environment/](http://australiachinafriendship.com.au/south-australias-green-environment/)).

**Finding 4: South Australia enjoys a clean and green and smart image which is important for tourism, trade, investment, education and migration. The GM Moratorium supports the image of clean and green and smart, and scrapping the GM Moratorium would undermine that image and its economic benefits.**

## Consumers of the world reject GM foods

There is no consumer demand for GM food. For consumers, GMOs are an unwanted intrusion into their diet and food selections, and GM offerings are to be avoided. This sentiment is not just prevalent amongst Australian consumers.

In the largest study of its kind, 23,000 consumers in 17 countries were quizzed about their food preferences. A consumer voice against GMOs was present in all 17 countries (GfK, 2017) (see Figure 4).



**Figure 4: Percentage of consumers in 17 countries who stated that “GM-free is important” in making their food choices (author's graph; data source: GfK, 2017).**

**Finding 5: Around the world, there is strong consumer sentiment against GMO food. As a consequence, there are economic price penalties for GM crops and growing what consumers do not want.**

## The price penalty for GM canola

The only GM crop that the *Independent Review* considers for uptake in SA is GM canola (Anderson, 2019).

GM canola attracts a price penalty (see Figure 5). The figures presented in the *Independent Review* (Fig.10, p.29) are a selection of the available data and are rather oddly attributed as “personal communication” (p.52) despite the prices being in the public domain and published regularly. The price penalty for GM canola is 7.2% (Figure 5). There is a consistent price penalty for WA GM canola, across years and grain depots (Taylor, 2019) (Figure 5).

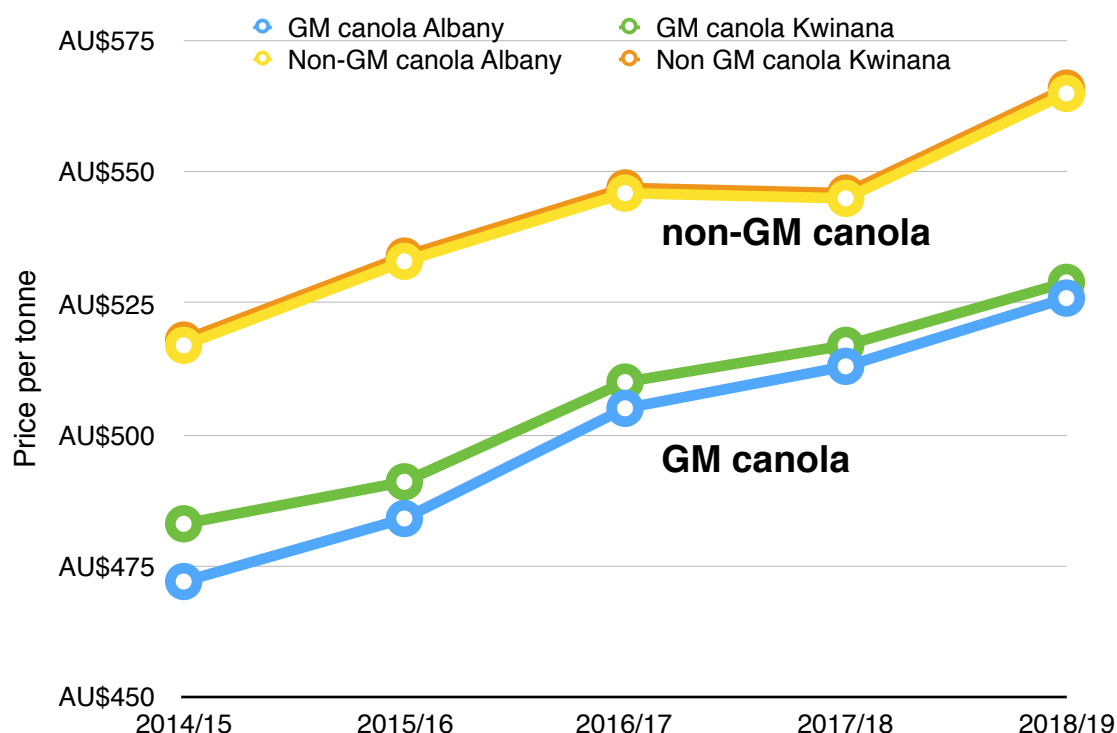


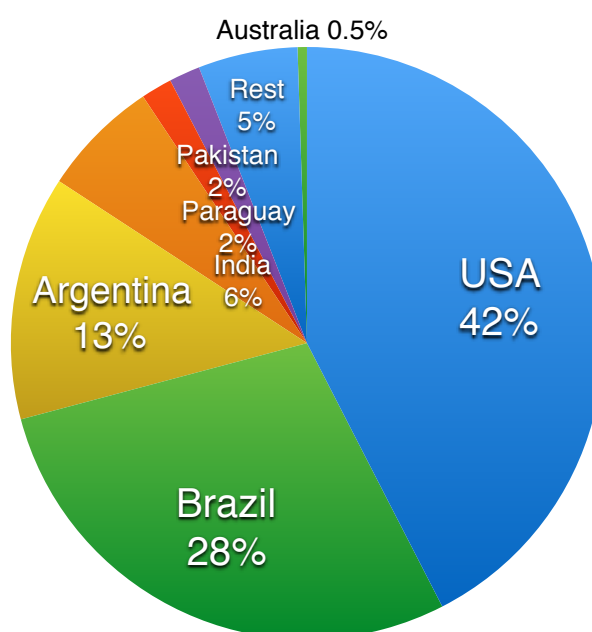
Figure 5: Average annual price per tonne of GM canola versus non-GM canola for grain delivered in WA (Kwinana and Albany) (author’s graph; data source: Taylor, 2019).

**Finding 6:** There is a price penalty for growing GM crops. The average price penalty for GM canola in WA is 7.2%.

## Australia is a minor player in GM agriculture

GM agriculture is dominated by just three countries, USA, Brazil and Argentina, which together account for 83% of the world's GM agriculture hectares. Australia accounts for less than half of one percent of the world's GM agriculture hectares (0.47%) (ISAAA, 2017). Australia is a very minor player in the world of GM agriculture (Figure 6).

This agrees with the data of the *Independent Review* which appear as Appendix 1 (Anderson, 2019, p.41).



**Figure 6: GM agriculture is concentrated in just three countries, USA, Brazil and Argentina, and Australia is a very minor GMO player (author's graph; data source: ISAAA, 2017).**

**Finding 7: GM agriculture is concentrated in just three countries, USA, Brazil and Argentina. Australia is a very minor player in the world of GM agriculture.**



## Segregation is a failure

The *Independent Review* in its Finding 3.3 claims that “The experience of GM canola production and marketing in other mainland states (sic) over the past decade reveals that segregation and identity preservation protocols and practice codes can and do ensure the successful coexistence of GM and non-GM crops in Australia” (Anderson, 2019, p.21). This is wishful thinking.

Segregation of GM and non-GM crops has failed in Western Australia and elsewhere. Considerable evidence was presented to that effect to the WA Parliamentary Inquiry, *Mechanisms for compensation for economic loss to farmers in Western Australia caused by contamination by genetically modified material* (see: [www.parliament.wa.gov.au/parliament/commit.nsf](http://www.parliament.wa.gov.au/parliament/commit.nsf); Swinbourne, 2019).

The WA Parliamentary Inquiry was convened because of the spectacular failure of GM segregation as witnessed in the *Marsh v Baxter* case. In that case an organic farm was contaminated with GM canola. The organic farm lost its organic certification because of the contamination. This resulted in economic losses of \$85,000 to the organic farm, a figure that was agreed between the parties and which accounted for the price premiums for organic that were forfeited. The legal expenses for this case were in the order of \$2 million (Paull, 2015). Such figures are outside the capacity of the average farmer to endure; it was eventually revealed that Monsanto was funding the GM farmer’s legal costs. The *Marsh v Baxter* case evidenced the failure of GM-segregation and the disproportionality of the damages suffered versus the legal-system costs of pursuing a claim.

*Marsh v Baxter* is not the only incident in WA where an organic farm has lost its certification due to GM contamination. However, as the WA Parliamentary Inquiry were at pains to point out in their questioning, there is a “chilling” impact of the *Marsh v Baxter* case in keeping contamination out of the public and legal gaze ([www.parliament.wa.gov.au/parliament/commit.nsf](http://www.parliament.wa.gov.au/parliament/commit.nsf)).

Witnesses to the WA Inquiry revealed that due to GM contamination of canola in WA, the response has been to redefine the grain grade of ‘non-GM’ so that, at least in WA, it no longer means ‘GM-free’, as might be expected, but rather it means something less. Since the introduction of GM canola into WA, the grade, ‘non-GM’, has been redefined to allow GM-contamination up to the level of 0.9% GM before it loses its ‘non-GM’ classification.

There is a price penalty in WA of downgrading produce to ‘GM’ of approximately 7.2%, hence this ‘work-around’ of re-defining terms. This ploy also facilitates a GM-contaminated batch of grain in WA being re-birthed as ‘non-GM’ by adding a sufficient dilution of GM-free grain to bring the contamination level down below the contamination threshold of 0.9%.

This is an unsatisfactory ‘work around’. A glass of milk contaminated to 0.9% with, for example, petrol, detergent, arsenic, iron filings or whatever is rather obviously unacceptable.

In Canada, the failure of segregation has meant that almost all canola in Canada is graded as GM. The Canada Canola Council then propagates the alchemic fiction that “canola oil made from GM seed is conventional canola oil” (CCC, 2017).

**Finding 8: Segregation of GM and non-GM canola has failed in WA and overseas. This failure has been glossed over in WA by redefining ‘non-GM’ as GM-contaminated to an extent not exceeding 0.9%.**

## Glyphosate is carcinogenic

GM Roundup Ready canola is dependent on multiple applications of the herbicide glyphosate. Multiple applications of this herbicide are prescribed to a single crop of GM canola, including a final dose close to harvest time when the crop is swathed (where the head of grain is decapitated from the body of the plant).

Glyphosate is a carcinogen (OEHHA, 2019). Glyphosate does not stay 'on the farm'. It contaminates water, air, soil, plants and animals. It is ingested by adults and children via various routes including via food and beverages (Cook, 2019) (Figures 7 & 8).

A gardener was recently awarded US\$289 million in damages for cancer caused from spraying glyphosate (Bellon, 2018). There are a further 9,300 plaintiffs reportedly seeking redress for glyphosate health damage and with more to come (Bender, 2018).

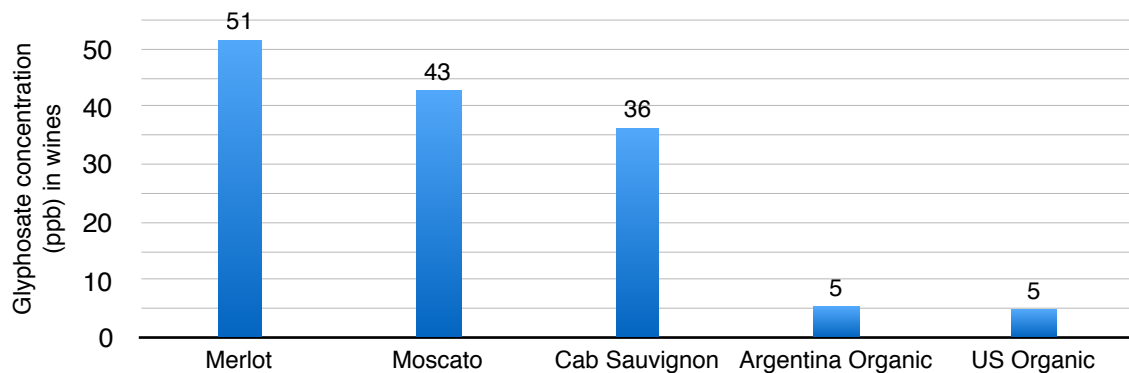


Figure 7: Glyphosate in wine (author's graph; data source: Cook, 2019).

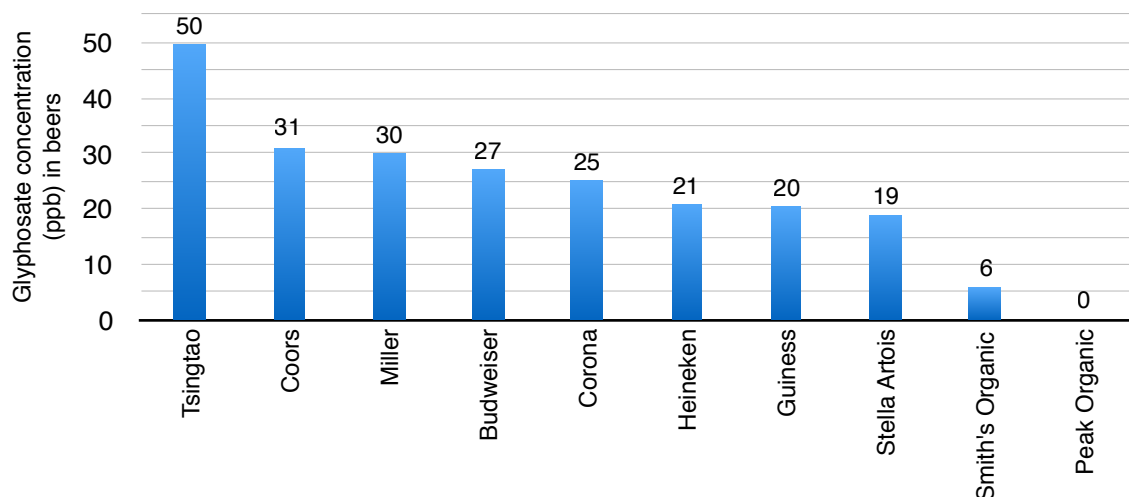


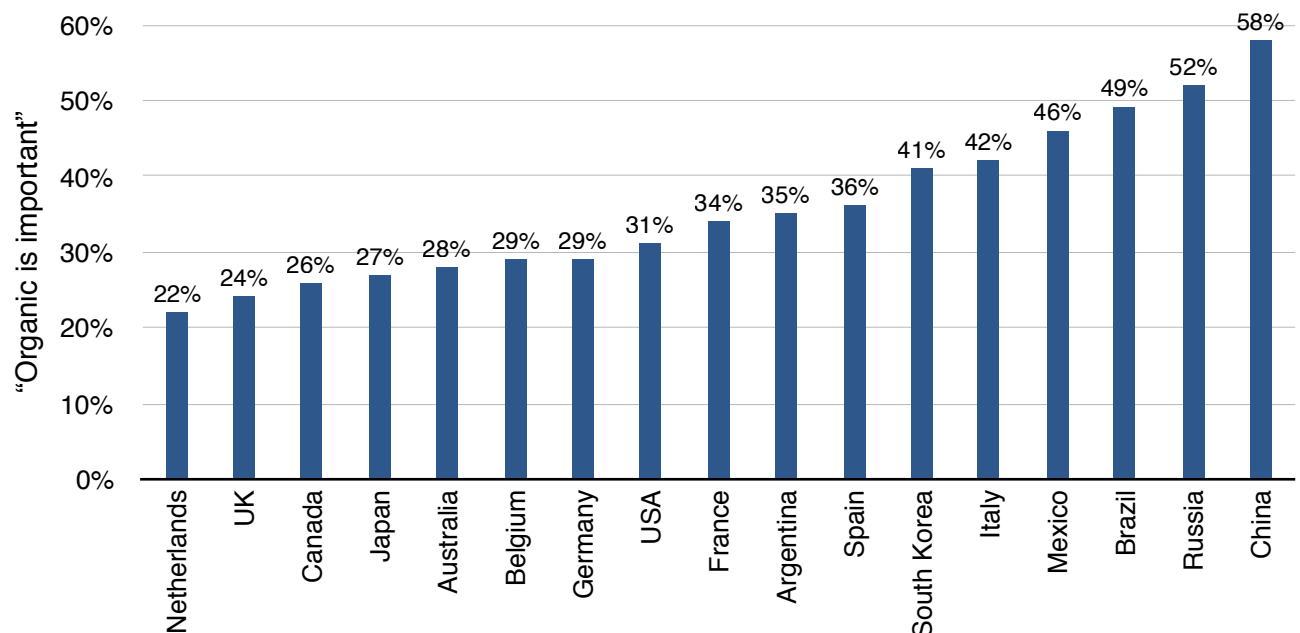
Figure 8: Glyphosate in beer (author's graph; data source: Cook, 2019).

**Finding 9: GM RR canola is glyphosate dependent. Glyphosate is carcinogenic. More glyphosate means more cancer and that means more health costs for SA. Contaminated beer and wine can have negative economic consequences and damage exports. Glyphosate lawsuits can be an economic drain on the SA economy.**

## Consumers don't want pesticides

There is strong global consumer demand for organic food. For consumers, pesticides and GMOs are unwanted intrusions into their diet and food selections. Many consumers are aware that a sure way to avoid GMOs is to buy organic. Organic standards exclude GMOs. Such sentiments are not just prevalent amongst Australian consumers.

In the largest study of its kind, 23,000 consumers in 17 countries were quizzed about their food preferences. A consumer voice for organic and against GMOs was present in all 17 countries (GfK, 2017) (see Figures 4 and 9).



**Figure 9: Percentage of consumers in 17 countries who stated that “Organic is important” in making their food choices (author's graph; data source: GfK, 2017).**

**Finding 10: Around the world, there is strong consumer sentiment for organic food (and against GM food). There are economic rewards for growing what consumers want.**

## Australia leads the world in Organic Agriculture

Australia leads the world in organic agriculture (Paull & Hennig, 2016) (Figure 10). World organic agriculture has been growing at 12% per annum for the past two decades (Figure 11). Australia accounts for 51% of the world's certified organic hectares (Willer & Lernoud, 2019). GMOs are a threat to organic agriculture, they are the 'cane toads' (invasive species) of clean and green agriculture (Paull, 2015, 2018).

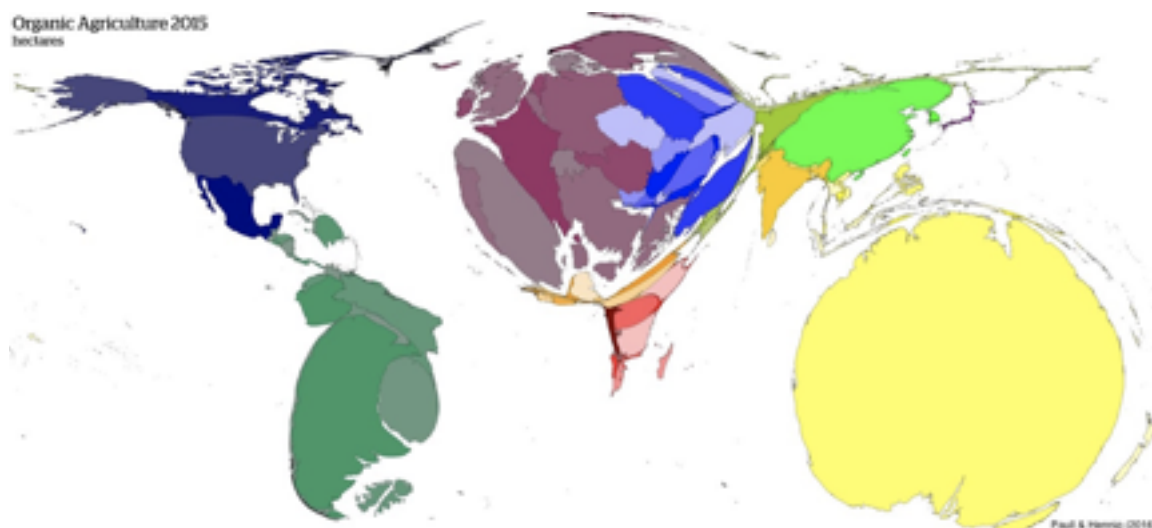


Figure 10: World density-equalizing map of global organic agriculture (based on certified organic hectares per country) (Paull & Hennig, 2016).

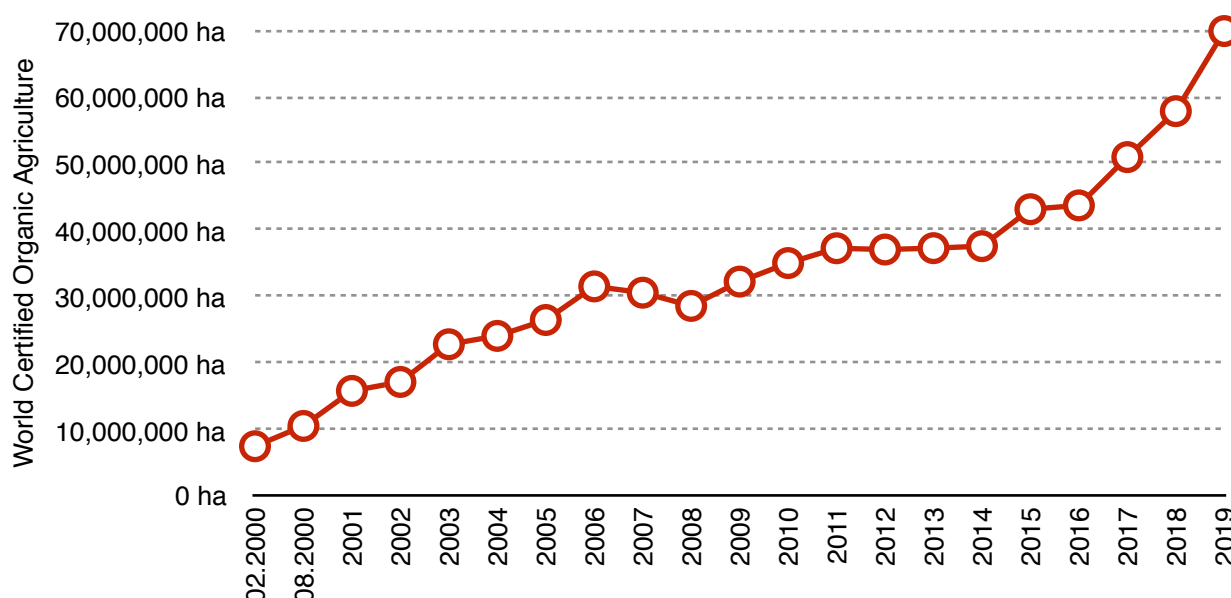


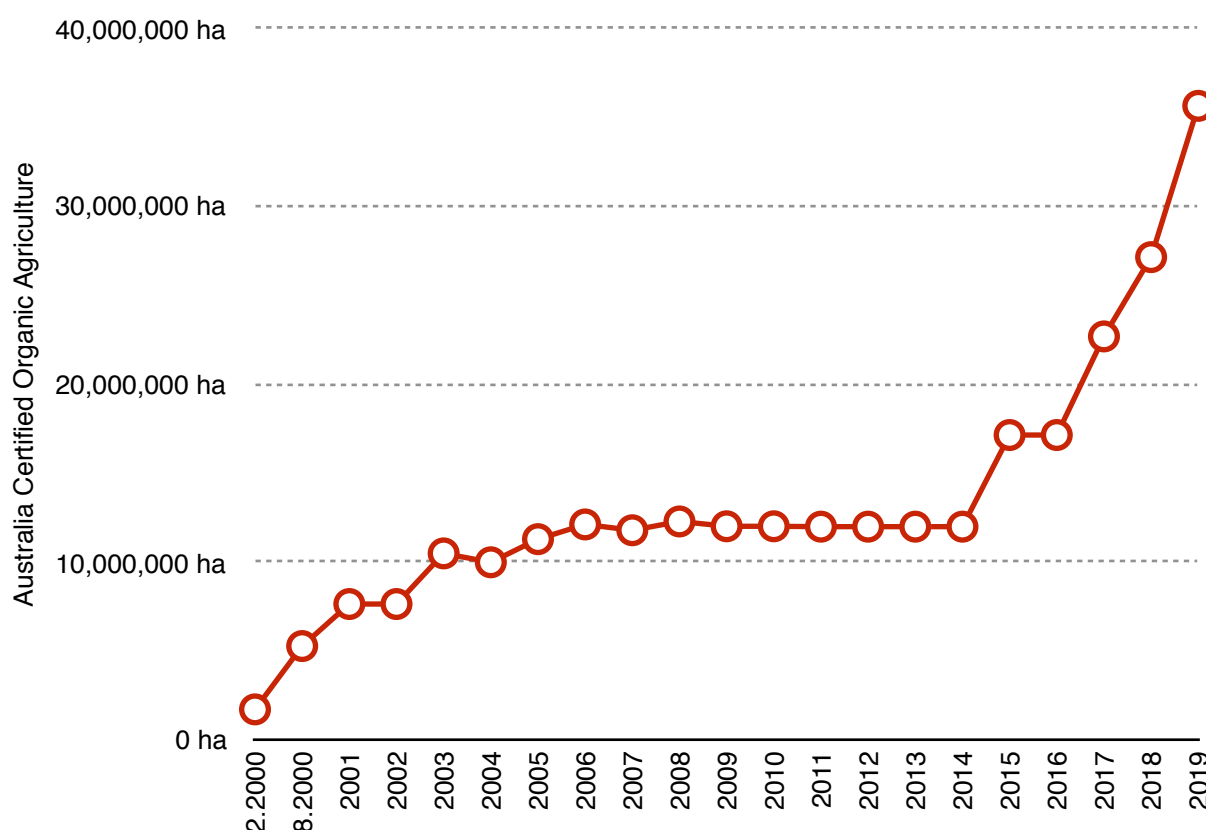
Figure 11: Global organic agriculture has been growing at 12% per annum for the past two decades (year reported) (author's graph; data sources: Willer & Youssefi, 2000 to Willer & Lernoud, 2019).

**Finding 11: Australia is the world leader in organic agriculture and accounts for 51% of the world's certified organic hectares. This is a great agricultural and economic success story. GMOs put organics at existential and economic risk.**

## Australian Organic Agriculture is growing at 22% per annum

In Australia, organic agriculture has been growing at 22% per annum (compounding) for the past five years (Figure 12). It is a great success story. World demand for organics continues to grow and the demand frequently outstrips supply.

China, Russia and India have recognised the value of producing food that consumers want to buy and for which consumers are willing to pay a premium. China has experienced its 'organic revolution' (Paull, 2007) and is now a major world exporter of organic food. Russia's Vladimir Putin has recognised the massive economic, trade and environmental advantages for Russia in converting to organic and banning GMOs (RT, 2014, 2017a, 2017b). India has one whole state converted to 100% organic and at least another eleven states are looking to replicate this achievement (Paull, 2017).



**Figure 12: Australia's organic agriculture has been growing at 22% per annum (compounding) for the past five years (year reported) (author's graph; data sources: Willer & Yussefi, 2000 to Willer & Lernoud, 2019).**

**Finding 12: Organic agriculture in Australia is growing at 22% per annum. This is a great agricultural and economic success story. To allow GMOs to put organics at risk for the sake of something that global consumers do not want would be economic stupidity.**

## South Australia leads the country in Organic Agriculture

South Australia leads the country in organic agriculture (Paull & Hennig, 2018). Forty percent of Australia's certified organic hectares is located in SA. The map of organics in Australia is dominated by the SA presence (Figure 13).

For the sake of producing some cheap GM canola it would be stupid to put South Australia's organics success story at economic risk.



Figure 13: South Australia accounts for 40% of Australia's organic hectares (Paull & Hennig, 2018).

**Finding 13: South Australia leads the country in organic agriculture (based on certified organic hectares). This is a great agricultural and economic success story. Allowing GMOs in SA would put organics at existential and economic risk. That would be economically stupid given that there is a price premium for organic produce and an economic penalty for GMO produce.**

## No Social Licence for GMOs

The majority (78%) of submissions to the *Independent Review* were in favour of maintaining the GM Moratorium. The *Independent Review* claims that “Community attitudes to the Moratorium were captured in the 216 submissions” and this is not disputed by the present author.

The conclusion to be drawn is that, on the available evidence, there is no social licence for scrapping SA’s existing GM Moratorium. The social licence is for maintaining the present GM Moratorium.

The SA GM Moratorium is consistent with the clean and green and smart image of SA (Figure 14). It would be foolhardy, contentious and socially disruptive to scrap the GM Moratorium, it would create uncertainty for the agriculture and food sector and would precipitate consumer, resident, trade buyer, and visitor push back with the attendant economic forfeits and costs.



Figure 14: South Australia enjoys a clean and green and smart image.

**Finding 14:** There is no social licence for GMOs. The SA GM Moratorium is consistent with the clean and green and smart image of SA and warrants being maintained for its social, environmental, health, education, trade and economic benefits.

## Conclusions and findings

The *Independent Review* fails because it is not 'independent' as it claims but is rather a partisan document apparently constructed to support the pre-existing views of its author, views that have already been expressed over the past two decades and are blindly in favour of genetically modified organism crops (GMOs). The opinion of the present reviewer is that the author of the *Independent Review* ought to have properly stood down for reasons including his vested interest in maintaining and propagating his own long standing pro-GM viewpoints.

The *Independent Review* fails to report that the vast majority (78%) of submissions are strongly in favour of retaining the existing GM Moratorium in SA (the *Independent Review* erroneously claims the contrary result which is inconsistent with its own raw data). This front-end failure of the *Independent Review* casts a cloud over any and all of the claims from thereon, many of which are ambit claims that can not readily (or at all) be checked.

The *Independent Review* fails to evaluate the broad economic and societal impacts of the subject. Instead, the *Independent Review* takes a very narrow and blinkered productionist view. The *Independent Review* fails to acknowledge the fact that consumers of the world do not want GM food. The *Independent Review* glosses over the fact that GM farmers get hit with a price penalty for their GM produce when they take it to market, and so, despite self-serving multi-national hype, economically they start 'behind the eight ball'.

The *Independent Review* makes no attempt to measure the negative economic impacts that scrapping the GM Moratorium would have on the clean and green and smart image of SA. The GM Moratorium is a point of difference for SA, a bragging point for SA, and it is a visible and a tangible validator of SA's claim to being clean and green and smart.

The *Independent Review* is a partisan document which falls short of meeting its brief, and its findings deserve to be questioned, scrutinised and ultimately rejected.

**The 14 findings of the present review follow:**

**Finding 1: The *Independent Review* is not independent at all. The *Independent Review* is written by a vocal and long term advocate of GMOs and GM-crops, and in addition it contains errors of fact from the outset (see Finding 2) and it should be disregarded in its entirety.**



**Finding 2: The majority (78%) of submissions supported retaining the existing SA GM Moratorium. The *Independent Review* falsely reports the contrary.**

**Finding 3: Australian supermarkets do not stock GM-foods because they are aware that Australian consumers have rejected such ‘frankenfoods’.**

**Finding 4: South Australia enjoys a clean and green and smart image which is important for tourism, trade, investment, education and migration. The GM Moratorium supports the image of clean and green and smart, and scrapping the GM Moratorium would undermine that image and its economic benefits.**

**Finding 5: Around the world, there is strong consumer sentiment against GMO food. As a consequence, there are economic price penalties for GM crops and growing what consumers do not want.**

**Finding 6: There is a price penalty for growing GM crops. The average price penalty for GM canola in WA is 7.2%.**

**Finding 7: GM agriculture is concentrated in just three countries, USA, Brazil and Argentina. Australia is a very minor player in the world of GM agriculture.**

**Finding 8: Segregation of GM and non-GM canola has failed in WA. This failure has been glossed over by redefining ‘non-GM’ as GM-contaminated to an extent not exceeding 0.9%.**

**Finding 9: GM RR canola is glyphosate dependent. Glyphosate is carcinogenic. More glyphosate means more cancer and that means more health costs for SA. Contaminated beer and wine can have negative economic consequences and damage exports. Glyphosate lawsuits can be an economic drain on the SA economy.**

**Finding 10: Around the world, there is strong consumer sentiment for organic food (and against GM food). There are economic rewards for growing what is consumers want.**

**Finding 11: Australia is the world leader in organic agriculture and accounts for 51% of the world’s certified organic hectares. This is a great agricultural and economic success story. GMOs put organics at existential and economic risk.**

**Finding 12: Organic agriculture in Australia is growing at 22% per annum. This is a great agricultural and economic success story. To allow GMOs to put organics at risk for the sake of something that global consumers do not want would be economic stupidity.**

**Finding 13: South Australia leads the country in organic agriculture (based on certified organic hectares). This is a great agricultural and economic success story. Allowing GMOs in SA would put organics at existential and economic risk. That would be economically stupid given that here is a price premium for organic produce and an economic penalty for GMO produce.**

**Finding 14: There is no social licence for GMOs. The SA GM Moratorium is consistent with the clean and green and smart image of SA and warrants being maintained for its social, environmental, health, education, trade and economic benefits.**

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