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# Best Practice - growing healthy soils, crops, markets and people:

*This submission concentrates mostly on regulation around farm chemicals and bio-technologies. The submission is a compilation of news reports and technical information, demonstrating the issues and lack of agreement that needs clarification and regulation, not deregulation.*

There is clear evidence in the past eight years that the world has learned so much about both agricultural chemicals and genetically modified products, that we cannot ignore the potential long term impacts, that were not previously recognised by the scientific community. The scientific knowledge has increased at least ten-fold in the past five years and many products that were once deemed to be safe due to older science have now been proven dangerous due to newer more updated techniques. Similar to the DDT and tobacco sagas of past decades, we are now faced head on with the glyphosate and GMO health issues in the 21st century and instead of managing for health, the industry is considering reducing red tape and allowing these new technologies to seriously harm our communities.

There is so much disagreement amongst farmers and the community about the safety of GM crops and foods that it is necesary for the Australian Government to take the time to call for a "Royal Commission into GM technologies and herbicide use in farming systems for the health of our communities". GM and glyphosate herbicides are becoming insidious within the food chain and are now reportedly found in the American water supply, food products, breast milk and more recently in honey. We do not as yet know the levels it is found in Australian foods or water supplies, however a recent GRDC project has found high levels of both glyphosate and AMPA as well as many other supposedly bio-degradable agricultural chemicals in our farming soils in every state tested to date. And to make the situation worse, the regulators have allowed and promoted the use of glyphosate as a crop dessicant to speed up harvest. This is an ideal way of making the crop plants pump even more chemical directly into the seeds being used for human consumption.

2013 Dec Glyphosate, "pathways to modern diseases II: Celiac sprue and gluten intolerance" - Anthony Samsel[1] and Stephanie Seneff[2]

*Glyphosate residues in wheat and other crops are likely increasing recently due to the growing practice of crop desiccation just prior to the harvest. We argue that the practice of "ripening" sugar cane with glyphosate may explain the recent surge in kidney failure among agricultural workers in Central America..... Glyphosate is the active ingredient in the herbicide Roundup. It is a broad-spectrum herbicide, considered to be nearly nontoxic to humans (Williams* et al.*, 2000). However, a recent paper (Samsel & Seneff, 2013), argued that glyphosate may be a key contributor to the obesity epidemic and the autism epidemic in the United States, as well as to several other diseases and conditions, such as Alzheimer's disease, Parkinson's disease, infertility, depression, and cancer.*

Some commentators have even suggested we test the Great Barrier Reef for residues causing harm to coral and fish health. A combination of increased health issues amongst the broad community, chemical resistance of weeds to glyphosate, impact of GM farmers on conventional and organic farmers, potential to harm long term clean green markets, profitability of farmers and the impact on the environment once the technology is established. All of this harm and the chemical industry wants even more freedom to do more harm. A look at the MRL's of chemicals - glyphosate - eggs and bananas 0.05 mg/kg and cereal grains 30 mg/kg. http://www.fao.org/fao-who-codexalimentarius/standards/pestres/pesticide-detail/en/?p_id=158

The most recent research by these same scientists suggest that the lower the dose, the more harm may be caused and the technology of GM has led to even higher rates of chemical being used.

*super weeds... In America, the use of glyphosate and GM crops has led to more herbicide use, not less as promoted. The total volume of glyphosate applied to the three biggest GE crops — corn, cotton and soybeans — increased 10-fold from 15 million pounds in 1996 to 159 million pounds in 2012. More biotech industry-led solutions will only perpetuate agriculture's reliance on chemicals as the end-all-be-all solution to weed and insect management. But this approach drives the rise of superweeds, poses risks to human health and threatens critical habitat for wildlife in the process.*
*http://www.foodandwaterwatch.org/sites/default/files/Superweeds%20Report%20July%202013.pdf*

http://civileats.com/2016/02/17/fda-to-start-testing-for-glyphosate-in-food/

*The U.S. Food and Drug Administration (FDA), the nation's chief food safety regulator, plans to start testing certain foods for residues of the world's most widely used weed killer after the World Health Organization's cancer experts last year declared the chemical a probable human carcinogen.*
*The FDA's move comes amid growing public concern about the safety of the herbicide known as glyphosate, and comes after the U.S Government Accountability Office (GAO)rebuked the agency for failing to do such assessments and for not disclosing that short-coming to the public.*

*Private companies, academics, and consumer groups have recently launched their own testing and claim to have detected glyphosate residues in breast milk, honey, cereal, wheat flour, soy sauce, infant formula, and other substances.*

## WA grain handlers crack down on illegal chemical use on back of high price for oats ABC Rural Posted 6 Sep 2016, 9:32am

***Western Australian grain handlers are cracking down on the use of illegal chemicals on oats for crop-topping, in order to preserve strong export markets.***

- *Off the back of high prices for oats, there have been substantial increases in production of the crop and, according to the Grain Industry Association of Western Australia (GIWA), demand remains strong for export.*
- *But there is concern some farmers might be using chemicals incorrectly, threatening the industry.*
- *GIWA oat council chairman Will Carrington-Jones said it had prompted the association to work with some of the state's grain handlers to test for chemical residue this year.*
- *He said Unigrain at Wagin would be testing all loads, as would CBH, but it was yet to be decided how the co-operative would carry out the testing.*
- *"But [a breach of maximum residue levels] is the one thing that will just close that export industry down," Mr Carrington-Jones said.*
- *Learning lessons from others' mistakes*
- *Mr Carrington-Jones said the grain industry had seen other countries lose their export markets for traces of glyphosate, and it had shed light on the consequences for the Australian grain industry.*
- *This will be the first year the grain handlers have committed to widespread testing.*
- *In Australia, it is illegal to use glyphosate and paraquat on oats for pre-harvest herbicide application, also know as crop-topping.*
- *Crop-topping is spraying crops with chemicals to kill weeds before harvest.*
- *In Western Australia, any delivery of grain that contains chemical residues that are not approved, or that are in excess of the maximum residue limit, is a breach of a number of acts.*
- *According to GIWA, "deliveries and sales of chemically-contaminated grain to exporters could be a direct breach of contractual obligations".*

- *Farmers still using glyphosate pre-harvest*
- *Mr Carrington-Jones said despite its legal repercussions, GIWA was aware of some farmers using glyphosate for crop-topping anyway.*
- *"It's not widespread, it's probably individuals," he said.*
- *"It is certainly not an area and a zone that are doing it, but we are aware that it is happening."*
- *Mr Carrington-Jones said if farmers were caught using either of the chemicals for crop-topping, the consequences could be serious.*
- *"I know Unigrain is looking to prosecute," he said.*
- *"And we're certainly backing CBH in on that. We think that's the clear message that's got to go out to growers.*
- *"If we were unlucky enough to find out a bulk shipload or container that had gone into whatever country had come back saying 'We've picked up glyphosate, we've picked up paraqaut, we've picked up low-gram in the system' then that's all going to be returned.*
- *"Word gets around pretty quick, and all of a sudden we'll have an oat industry that is worth bugger all."*
- *Mr Carrington-Jones said at this stage it was just Western Australia cracking down on illegal chemical use, but he believed other states would follow.*

https://www.foodstandards.gov.au/code/applications/documents/A1021%20GM%20Maize%20SD2%20Glyphosate%20residues.pdf

FSANZ - report ASSESSMENT OF GLYPHOSATE RESIDUES

- *Two novel residues are generated in maize 98140 plants following glyphosate application, namely N-acetyl glyphosate (NAG) and N-acetyl aminomethylphosphonic acid (N-acetyl AMPA). These residues are also generated in soy 356043 plants following application of glyphosate (Application 1006).....*
- *Therefore the current Australian ADI for glyphosate of 0.3 mg/kg bw/day remains appropriate for dietary risk assessment purposes..... If new residues are generated that have not previously been assessed for safety then their toxicity must be considered as it may have implications for the determination of dietary risk or the residue definition of the maximum residue limit (MRL)1 . The purpose of the MRL is to ensure the legitimate and safe use of pesticides on commodities grown in, or imported into, Australia or New Zealand..... The current ADI for glyphosate of 0.3 mg/kg bw/day was set in 19852 based on the no observed effect level (NOEL) of 30 mg/kg bw/day, the highest dose tested in a 2-year rat*

*study, and using a 100-fold safety factor (10-fold intra and interspecies safety factors). There is currently no ADI for NAG, AMPA or N-acetyl AMPA.*

GM vs Non GM Farmers (regulations for lawfulness)

A few farmers who have accepted GM believe it is a right to impact on the rest of the community without any consideration for the majority of Australia. The majority of Australia is still clean and green and can supply domestic markets and the world with healthy non GM food. Australia has more than 17 million ha of organic certified land which is more than any other country and nearly half of the worlds area.

Governments have not planned for the impact or roll-out of this technology or tested it thoroughly for impact on soil, plant, animal or human health. In fact, these two combined technologies may be leading to massive health crisis in north America and potentially in Australia. A recent visit by world renowned agricultural scientist, emeritus professor Don Huber (July 2016), highlighted the need to understand soil and plant interactions prior to undertaking any pesticide or GM technology changes as most if not all problems are nutritional in our farming systems.

Too often farmers and agronomists/ chemical resellers opt for the bandaid in a drum package in place of good old agronomy and research to solve problems. As a nation our resources need to go into basic agronomy research prior to resorting to quick fixes to solve problems.

Farmers who have planted GM crops for whatever reason, should not have the right to impact other farmers as has been seen in the "Marsh v Baxter" case in WA in 2014. There will be many more of these cases in court in coming years if the Australian government does not change the laws to right this wrong.

http://www.nejm.org/doi/full/10.1056/NEJMp1505660#t=article

## GMOs, Herbicides, and Public Health

Philip J. Landrigan, M.D., and Charles Benbrook, Ph.D.

N Engl J Med 2015; 373:693-695August 20, 2015DOI: 10.1056/NEJMp1505660

The National Academy of Sciences has twice reviewed the safety of GM crops — in 2000 and 2004.3 ..... They noted that genetic transformation has the potential to produce unanticipated allergens or toxins and might alter the nutritional quality of food. Both reports recommended development of new risk-assessment tools and postmarketing surveillance. Those recommendations have largely gone unheeded.

The second new development is the determination by the IARC in 2015 that glyphosate is a "probable human carcinogen"1 and 2,4-D a "possible human carcinogen."2 These classifications were based on comprehensive assessments of the toxicologic and epidemiologic literature that linked both herbicides to dose-related increases in malignant tumors at multiple anatomical sites in animals and linked glyphosate to an increased incidence of non-Hodgkin's lymphoma in humans.

http://www.abc.net.au/news/2014-11-20/wach-gm-free-farmers/5906842

***Grain growers unite to oppose genetically modified farming***

***WA Country Hour*** *Updated 21 Nov 2014, 12:38pm*

***A group of Western Australian grain growers have formed a united voice to oppose genetically modified food production.***

- *The group is called GM-Free farmers and has formed in response to the slated repeal of the GM Free Crop Areas Act of 2003.*
- *Group spokesperson and Williams farmer Janette Liddlow says she wants the anti-GM voice to be loud and clear.*
- *"In this debate the Minister for Agriculture and the bio tech industry is very much listening to a minority view and the real concerns about GM crops and the impacts on markets and the community are not being heard," she said.*
- *She says when the act was last reviewed in 2009 author Greg Calcutt, indicated the legislation was working effectively.*
- *"We are asking that Minister Baston looks at the Calcutt review and acts on the findings of that review and definitely does not repeal this act in any way but tightens the regulations within it."*

MP Darren West accused of dragging out debate on GM crops legislation

Posted 20 May 2016, 11:57am

***Important to put on the record all issues involved in the debate'***

- *Mr West conceded it was a long speech but said as the only working farmer in Parliament it was important to put on the record all of the issues involved in the debate.*
- *"I understand this is a contentious issue," he said.*
- *"It's an issue that divides the community, it's an issue that divides political parties and it's also an issue that can divide ourselves.*

- *"These are the difficult debates and I don't shy away from them as you've seen this week."*
- *He said conversely Mr Brown spoke for less than five minutes during the debate and was the one that needed to explain himself.*
- *"Mr Brown is probably the one that needs to explain to the electorate why it is that such an important piece of legislation he allocated, and [he] only had enough material to speak for four minutes, and some of that time was having a go at me for the length of my speech," he said.*

- *Mr West said he recognised difficulties farmers were facing in parts of the state controlling radish and ryegrass, but that was not a reason to keep GM canola in the state.*

- *"Yes there is going to be some challenges but I think there is a way through all this," Mr West said.*

- *"We are 98.5 per cent GM free now. Markets around the world are becoming more discerning and asking for clean green food, and more importantly paying large premiums for that.*

- *"So we don't see that the future for agriculture in Western Australia is to produce shipload after shipload of cheap food.*

- *"I think we need to be targeting those higher value markets."*

http://www.ucsusa.org/food_and_agriculture/solutions/advance-sustainable-agriculture/sustainable-agriculture.html#.V9odc_l97IU

The OGTR and FSANZ are supposed to test GM products to a level that they can ensure that only food that is safe for human consumption is approved for our communities to eat. However, the level of testing and agreed protocols are not adequate as they were developed when the industry and science was just getting established. This has been pointed out over and again by top scientists around the world as new science has showed the flaws in old protocols. However, the GM industry seems to control the regulators and governments simply do not understand the right questions to ask of scientists or regulators, to make regulators do their jobs. Regulators use the same old GRAS (generally recognised as safe) excuse to hide behind, so that no real testing has to be undertaken. Australia needs at the bare minimum, long term lifetime animal feeding trials to prove safety.

## Sugar Cane

### Sugar research for a profitable industry

http://www.csiro.au/en/Research/AF/Areas/Plant-Science/Sugar/sugar-overview

- *Before the products from these varieties can be used, they will need approval from the Office of the Gene Technology Regulator, which ensures GM plants are safe for humans and the environment and from Food Standards Australia and New Zealand which regulates food safety. We are conducting research to provide baseline information on sugarcane that will be used for assessing GM varieties.*
- *For food safety approval, we have analysed the nutritional content of the sugarcane stalk from current commercial varieties. The work will enable GM sugarcane to be compared against this baseline for regulatory purposes.*
- *Research to ensure that future GM sugarcane varieties will be released without any detrimental environmental effects is focussed on the reproductive biology of sugarcane and related species. We have measured pollen flow to form hybrid seeds and the likelihood that seeds can grow and establish plants outside cultivation.*

Although the sugar is supposed to be tested as a feedstuff with livestock and also tested for human consumption it is not going to be tested at all.

## Bananas

***Genetically modified Queensland bananas to join fight against catastrophic results of vitamin A deficiency in Africa***

***Genetically modified bananas grown in far north Queensland and bound for Africa are about to undergo human trials in the United States.***

- *Queensland University of Technology (QUT) researchers have engineered the fruit to increase the amount of beta-carotene, which is converted to vitamin A in the body.*
- *The aim is to prevent thousands of children in East Africa from dying or going blind as a result of vitamin A deficiency.*
- *The Bill and Melinda Gates Foundation has spent $12 million on the project, which is being led by Professor James Dale from QUT's Centre for Tropical Crops and Biocommodities.*

## Golden Rice

The banana project above sounds like it will be as big a failure as the Golden Rice program taking nearly 20 years to be a failure.

**The 'Golden Rice' - An Exercise in How Not to Do Science** *http://www.i-sis.org.uk/rice.php*
*'Golden rice' is not a 'second generation' GM crop as has been claimed. It involves standard first generation technology, and carries some of the worst features in terms of hazards to health and biodiversity. Rockefeller Foundation, the major funder of the project by far has withdrawn support from it. The project should be abandoned altogether.*

## Wheat

*Debates arise over use of genetically modified crops in light of Queensland wheat infestation*

*Updated 20 Jun 2016, 1:27pm*

- *..... GM crops in fact are the most tested food technology in human history altogether and it is the science that really holds some very, very important breakthroughs for farming into the future.*
- *TIM JEANES: Not so says the executive director of the group Gene Ethics, Bob Phelps.*
- *He says wheat varieties have proven notoriously difficult to develop using GM technology and the state should keep its moratorium.*
- *BOB PHELPS: Well, the new genetic manipulation technologies known as gene editing pose the same kinds of hazards at least as the old cut and paste techniques to the environment, to public health.*
- *TIM JEANES: But go to any supermarket in America for example and there's a fair chance that you buy your canola, corn, soya bean products, you will be buying a GM product. Surely if these health risks that you say are real, they would have been banned?*
- *BOB PHELPS: We're not saying that anybody is going to die tomorrow from these things but for instance the recent revelations about the most used herbicide in the world glyphosate, that it's a probable human carcinogen; these things should concern us and the same with the slow burn impacts of genetic manipulation.*

## Canola

*Farmers continue to debate the merits of genetically modified crops as Monsanto marks 20 years of GM in Australia*

**ABC Rural** Updated 6 Jun 2016, 1:19pm

- *The cotton industry has been the main adopter of GM crops, which account for all but 2 per cent of Australia's cotton.*

**The campaign to support GM crops**

- *But the grains industry remains split, with farmers receiving mixed benefits.*
- *GM canola has consistently sold for a lower price and was marked down as much as $50 a tonne in the 2015/16 harvest in Western Australia.*
- *However, WA growers that use GM canola say its benefit is in reducing weeds, which are costly to control.*
- *WA Farmers' Grains Council vice president Mic Fels grows both GM and conventional canola.*
- *He said the biggest benefit was GM as a tool to minimise weeds.*
- *"I try to grow as little GM canola as possible because of the price hit at harvest," Mr Fels said.*
- *Canola growers have faced discounts of $40-50 per tonne in the past harvest, as China eased out of the market.*
- *The Oilseeds Federation of Australia said latest figures showed 30 per cent of the area sown to canola in Western Australia was GM, while in Victoria and NSW it was 10 per cent.*

***Farmers fighting against GM canola***

- *A group of farmers in Williams, in the Western Australian wheatbelt, established an anti-GM group to raise its concerns.*
- *Group member Janette Liddelow said there was no value growing GM canola, and argued there had been an increase in use of the herbicide glyphosate since the start of GM canola cropping.*
- *"We don't use GM canola on our farm for a number of reasons — we don't believe it is a proven, safe technology," Ms Liddelow said.*
- *"Economically, GM canola doesn't make sense with consistently less return and higher costs."*
- *Ms Liddelow said the only reason GM canola was grown in Western Australia was as a weed control, but there were other ways of dealing with what she called "an increasingly difficult problem".*

- *"[We are] cutting hay, using a chaff cart, narrow windrow burning, and using different chemicals," she said.*

- *"As a farming enterprise, we are a business and have to survive but our priority is producing food for people, not a commodity for the market and we are here for the long haul, so environmental sustainability is important.*

- *"There is no room for GM technology in this equation. There's been a heavy price discount for GM canola, and consumers are saying quite strongly that they don't want it.*

- *"GM is one of those huge issues we want to keep away from."*

- *Ms Liddelow's anti-GM group fears genetically modified wheat will receive approval for commercial planting in WA.*

- *"Nobody wants GM wheat around the world, and it's our main agricultural export. To think we would risk that is beyond comprehension.*

## Higher pay for European dairy farmers supplying GM free milk

**ABC Rural** Posted Wed at 7:47am

***Consumer demand has prompted one of the world's largest dairy companies to pay farmers more to supply GM-free milk.***

- *Scandinavian dairy co-operative Arla Foods will offer farmers a 4 per cent increase in their milk payments if they move away from genetically modified feeds.*
- *Director Theis Brogger said central European consumers, particularly in Germany, were willing to pay a premium for GM-free products.*
- *"We are not discounting the value of GM in a different context," he said.*
- *"We are not saying that one type of milk is necessarily better than the other but we are, as a big global dairy company, always looking to be able to supply to the different needs and demands that are in the market.*
- *"This is a new one."*

- *Arla imports Lurpak butters and Costello cheeses into Australia.*

- *The company is paying European farmers around 26 euro cents a litre (37c/l).*
- *About 3000 of Arla's existing Swedish farmers already supply the company with a GM-free milk.*

- *The company expects a further 1000 farmers from central Europe would contribute to the program.*

- *Arla's farmers, on average, supply around three million litres of milk to the company annually.*

## *Agribusiness mergers a major cause for concern: expert*

**ABC Rural** Posted 7 Jun 2016, 2:25pm

- ***Six conglomerate giants are in varying stages of merger talks that could see that number shrink to three, and one United States expert predicts that will see farmers paying more for seeds and chemicals in the future.***
- *American companies Dow Chemical and DuPont Pioneer are in formal talks for a merger worth $US130 billion ($176.5b), while Swiss-based Syngenta is negotiating a $US43 billion ($58b) with ChemChina.*
- *Monsanto recently rejected a $US62 billion ($84b) takeover offer from Germany's Bayer AG.*
- *While some of the companies are highly diversified industrial corporations, producing everything from pharmaceuticals to household paints, they all share a common investment in biotechnology and crop chemicals.*
- *For the past few years, Monsanto and Dow Chemical have supplied 70 per cent of the US corn seed market, but the trend of market consolidation in the seed market has been rapidly moving to this point since the 1980s.*
- *Retired University of Iowa distinguished professorNeil E Harl grew up on a farm in the late 1930s, and has spent a lifetime in academia, specialising in agriculture, economics and legal studies.*
- *"I argue that from a policy perspective we shouldn't only look at the overlap in these companies today, but where do we think they will be in five and 10 and 20 years from now.*
- *"Because a lot of the seeds and chemical business is really becoming a matter of chemistry.*
- *"We're going to see a very small group that has control over the products, that have patent power for the duration of the patent."*
- *Professor Harl has offered his opinions about the rate and scale of consolidation to congress in 1995 as part of an advisory committee, as well as in 2010.*
- *He blames a cosy relationship between agriculture lobby groups and the major companies for the lack of debate from opposition groups.*
- *"They provide a lot of benefits to farm groups and they try to be viewed as friendly. They woo them, and there is reluctance on the part of the farm organisations to take them on."*
- *In the United States, competition law, or anti-trust rules, are overseen by one part of the US Justice Department and the Federal Trade Commission, and he again blames strong and effective lobbing on behalf of industry for the lack of scrutiny about consolidation in the sector.*

Percy Schmeiser case in 1998 with Monsanto sueing him for them contaminating his paddocks.

https://www.youtube.com/watch?v=su0om5L4Bhg

Farmers need to have the right to sue monsanto, Bayer or any multinational once their paddock has been contaminated by the GM seed if they did not purchase the seed or plant the seed themselves. Farmers need these rights before anymore gm crops are introduced.

## Organisations involved in trialling GMO crops include:

- Victorian DPI
- Sugar Research Australia Ltd (formerly BSES Limited)
- The University of Adelaide
- Queensland University of Technology
- CSIRO
- Bayer CropScience Pty Ltd
- Monsanto Australia Ltd
- Victorian Government Department of Environment and Primary Industries
- Nuseed Pty Ltd
- Go Resources

## Options to replace Biotech crops and glyphosate

***Sustainable Agriculture Techniques***

*Sustainable agriculture provides high yields without undermining the natural systems and resources that productivity depends on. Farmers who take a sustainable approach work efficiently with natural processes rather than ignoring or struggling against them – and use the best of current knowledge and technology to avoid the unintended consequences of industrial, chemical-based agriculture. One important result is that farmers are able to minimize their use of pesticides and fertilizers, thereby saving money and protecting future productivity, as well as the environment.*

- *Crop Rotation*
- *Cover Crops*
- *Soil Enrichment*
- *Natural Pest Predators*
- *Biointensive Integrated Pest Management*

***Cover Crops***

*Many farmers also take advantage of the benefits of having plants growing in the soil at all times, rather than leaving the ground bare between cropping periods, which produces unintended problems. The planting of cover crops such as hairy vetch, clover, or oats helps farmers achieve the basic goals of:*

- *preventing soil erosion,*
- *suppressing weeds, and*
- *enhancing soil quality.*
  *Using appropriate cover crops is worth the extra effort because it reduces the need for chemical inputs like herbicides, insecticides, and fertilizers.*

***Biointensive Integrated Pest Management***

*One of the most promising technologies is the control of pests through integrated pest management (IPM). This approach relies to the greatest possible extent on biological rather than chemical measures, and emphasizes the prevention of pest problems with crop rotation; the reintroduction of natural, disease-fighting microbes into plants/soil, and release of beneficial organisms that prey on the pests. Once a particular pest problem is identified, responses include the use of sterile males, biocontrol agents like ladybugs. Chemical pesticides are only used as a last resort.*

**https://www.daf.qld.gov.au/plants/field-crops-and-pastures/research/about-us**

***Integrated pest and disease management***

- *Maximising sustainable control of insect pests and diseases through integrating cultural controls with traditional chemical options.*
- *Awareness of the latest technologies and processes in reducing chemical use on farms and pesticide application processes.*

***Integrated weed management***

- *Adopting integrated weed management, combining herbicide options with strategic crop phases for more effective seed bank management and effective rotations of herbicide product groups for resistance management.*

The overall long term consequences of GM crops include:

- damaged infertile soil, loss of beneficial microbes and insects,
- Increase in pathogens,
- Loss of biodiversity,
- Increasing levels of pesticides, increasing strength of pesticides,
- Increasingly risky GM techniques and
- Human health problems associated with eating unlabelled GM crops coated in poisons.

The community has seen problems in the past with GM and is why we need **more regulation in GM crops not less**.

## Recommendations

- Australian Government to hold a Royal Commission into the role and implementation of the OGTR and FSANZ in relation to GM crops and human food products.
- Australian Government to immediately move to assess the safety of glyphosate based farm poisons and implement a new farming technologies program for industry bio-security.
- Australian Government to review and reform the approval process for biotech crops using known science today.
- The FSANZ and OGTR should more rigorously evaluate the potentially harmful effects of GE crops and linked chemicals before commercialization, to ensure the safety of humans and the environment.
- Australian Government to support and encourage cover cropping, new farming options and strategic tillage best management practices to prevent weed resistance.
- Australian Government to undertake a full assessment of food being sold in stores in Australia to measure levels of glyphosate and other chemicals (not being done by FSANZ).
- That a full assessment be undertaken to monitor all imported foods.
- Australian Government to educate and encourage farmers to adopt non-chemical strategies for long-term weed control.
- Australian Government must dedicate research dollars to developing alternatives for sustainably managing herbicide-resistant weeds
- Australian Government must request that GM manufacturers donate all funds required to fully safety test new and existing GM crops under long term feeding trials. (at no govt cost)
- Australian Government to arrange the most appropriate universities in regional Australia to undertake all necesary long term animal feeding trials and other research as required.
- The Precautionary principle should be applied to all current GM crops and any future applications including new breeding techniques (CRISPR) in the future.
- All food with any GM content should be labelled as GM.