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Opinion piece: The Gene Revolution - GM crops and farming reality

*The time has come for all sectors of Australia's grain industry, from farm to shop, to get on top of GM technology, urges **Australia's former Chief Scientist, Dr Jim Peacock.***

Our Green Revolution is near spent. The enormous and lasting gains made in crop yield through conventional plant breeding, mechanization, crop protection and clever agronomy are slowing.

But the next era for mainstream broadacre farming is already here, it might well be called the *Gene Revolution*.

More than 95% of Australia's near 400,000 hectare cotton crop this summer consists of GM varieties. And in only the 3rd year of commercial production, there are some 133,300 hectares of GM canola in NSW, Victoria and WA this spring – an estimated 9% of the total canola crop.

What else is coming over the hill? Well, you name it ... GM research underway in Australia covers: papaya, pineapple, sugarcane, grapevines, carnations, rice, white clover, wheat, Indian mustard, bananas, barley, perennial ryegrass, tall fescue, corn and roses. Most work is focusing on key traits which lessen production risks and underpin yield.

The big-ticket item, GM wheat, is just 7 or more years away. Clearly, our farmers and their advisors, and the supply chain all the way through to customers and consumers, now need to start appreciating the GM reality, and separate myth from fact.

Fact 1: GM science will be essential for our food security in the decades ahead. It is estimated that the number of humans on the planet will rise from 6 billion in 2000 to near 9 billion in 2050, and food demand will rise by 70% (Source: FAO).

Fact 2: Globally, farmers and supply-chains are going with GM; in 2009, 134 million hectares of GM crops were planted in 26 countries representing an 80-fold increase since 1996 when GM crops were first commercialised. There were 2 million new adopters last year.

Fact 3: It is estimated that biotech related gains in corn, soybean & canola had delivered an extra 14 million tonnes of production since 1996. And it has all been successfully traded.

Fact 4: Farmers who use GM technology appreciate that GM R&D businesses simply need a return on their long-term investments. Remember, much GM work is by public-private collaboration, and these bodies can only protect their IP through patents and fund their work via royalties. It is how innovation is incentivized. It is standard practice. And market forces ensure the pricing of the technology to farmers is realistic.

Fact 5: The costs of doing the R&D and bringing a variety to market are huge: Monsanto alone spends \$1.1bn per year (\$3 million a day) in research. Multiply that figure 10-fold or more for the global GM R&D effort.

Perhaps the biggest misguided myth is around 'safety'. Those who have a different view of mainstream farming reality continue to raise questions about GM science and GM crop safety, and refer to studies which purport to have discovered something harmful about GM.

Fact 6: Such studies have, without exception, been discredited by the weight of mainstream scientific evidence, opinion and peer review, and by recognised regulatory agencies around the world.

Fact 7: Major scientific and health organizations, and regulatory bodies, have endorsed the safety of approved GM crops to human health and the environment.

In Australia, we are regulatory leaders. We have an excellent, world-class system that is purposely designed to pick-up anomalies and look for any potential problem. Human health and environmental safety is the first priority. Why would it be anything other than that? Indeed, GM crops are subjected to incredible scrutiny, whereas 'conventional' crops receive relatively less.

For example, our record started with *Gossypium* sp. When we started work with cotton (*Gossypium pima*) in the early 1990's to develop GM varieties, we knew that there were some native Australian *Gossypium* plant species. We were rightly required to conduct thousands of tests to analyse every possible facet of potential transfer of genetic material from the new GM varieties to the native plants.

The point is that we had to do the work, and the system proved that there were no risks. If the extent and comprehensive-ness of the safety analyses was seen and understood by the public, people would not give a second thought to approved GM varieties.

Fact 8: Over the years billions of meals have been made and consumed that contain one or more GM crop ingredients or whole foods.

While GM canola and cottonseed oils are pure oil – they contain no proteins – even if they did, they'd be broken down into basic amino-acids. It happens every meal: just think of what was for dinner last night!

In our gut all proteins, starches and fats/oils that are in lettuce, carrots, potatoes, pumpkin, tomatoes, corn, soybeans and canola dairy products, beef, lamb, chicken or fish are all broken down into the basic biochemical building blocks, and no genetic material becomes incorporated into our genes!

The reality of today's farming is that scientists are working for the betterment of society and GM crops are simply the next major agricultural technology.

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About Dr Peacock

Formerly Australia's Chief Scientist and Chief of CSIRO Plant Industry in Canberra, Dr Peacock is one of the world's leading plant researchers. He has been recognised internationally in the field of plant molecular biology. In the Australian Day Honours, 1994, he was made a Companion of the Order of Australia for his contribution to the nation. He is a Fellow of the Australian Academy of Science, The Royal Society of London and Australian Academy of Technological Sciences and Engineering and has had numerous other posts in the public and private sectors.

Agrifood Awareness Australia Limited (AFAA) is an industry initiative, established to increase public awareness of, and encourage informed debate and decision-making about gene technology. AFAA is committed to providing quality, factual, science-based information on the use of gene technology in agriculture to allow for informed decisions. AFAA works broadly across the agriculture sector. The organisation has three founding members – [CropLife Australia](#), [Grains Research and Development Corporation](#) and the [National Farmers' Federation](#) – and our activities are also supported by the sugar industry, the [Grain Growers Association](#) and through a project partnership with the red meat industry.

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