Will cleverly crafted prose win over science and evidence? The case of GM wheat

Paula Fitzgerald

The upcoming Federal election in Australia has provided some entertainment for the past few weeks with many promises and colourful pictorial moments emerging. Some within the media appear to have shifted from the analysis of policy to instead focussing on our politicians' words, movements and even gestures. Such a focus can make one become slightly cynical and question both the depth of our media reporting and the lengths at which our politicians will go in presentation and the delivery of carefully crafted messages to lure voters.

Outside of the political sphere, an award for message crafting and overlooking fact must surely be due to the Greenpeace Australia team which recently issued a statement about GM wheat research and development. The title itself – "No GM in our daily bread" - was cleverly composed by their spin team. There are several ways in which it could be interpreted. On one level, it is correct to say that there is no GM wheat in our bread, as GM wheat has not been commercialised anywhere in the world. On another level however, the statement is incorrect, as ingredients from other approved GM crops (which despite their huge uptake, Greenpeace conveniently chooses to ignore) could be utilised in bread making. Finally, those of a more cynical nature may question whether the reference to "our daily bread" is supposed to have some biblical connotation, thereby drawing readers in.

Despite the catchy headline the story appears to have failed to capture any attention which is a good outcome as the narrative, albeit colourful, is short on fact. The leading paragraph reads:

> "The threat of GE wheat is looming in Australia. If chemical companies succeed in progressing these trials to market-release stage, we could soon be eating polluted GE food in our breakfast, lunch and dinner."

Let's take a careful look at this. Apparently, GM wheat is automatically a "threat" - although there is no indication as to why this is so. Australia has a strong history in wheat breeding and it is unclear as to why a continuation of this, utilising newer plant science techniques, poses any threat at all.

Following this we have the word "looming". For me, if something is looming it is imminent. Yet, best estimates suggest that from a research and development perspective, that is, a science timeline, GM wheat is at least seven years away from commercialisation. I'm not sure about others, but if I had seven years to address all the looming issues currently on my jobs list, I could remain rather relaxed.

The next sentence implies that "chemical companies" are responsible for GM wheat trials. This statement is clearly false, as a quick click on the Office of the Gene Technology Regulator's (OGTR) website shows such companies are not leading the GM wheat research in Australia. Plant science companies are actively partnering with publicly funded Australian R&D providers across a range of commodity sectors, and in the case of cotton, have done so for decades. In the past year we have seen a number of new partnerships develop. This includes BSES and DuPont working on improving the productivity of sugarcane, CSIRO and Bayer CropScience working on cereals, and the Victorian Department of Primary Industry and Dow Agrosciences forming an alliance to work on new plant traits and varieties. Over and above these partnerships, the OGTR website clearly shows that it is Australian scientists and research entities driving GM wheat research.

Lastly, comes that rather emotive word "polluted" – as in toxic, reactive and contaminating. All are words that Greenpeace uses to rev up the anxiety levels in people who don't know better. Suffice to say that

GM crops have now been grown, traded and consumed around the world for 14 years and have been subjected to more tests and trials than any conventionally-bred varieties of food crops. Greenpeace continues to deny this reality and the fact that the introduction of GM wheat – at its earliest in seven years time – will not have a much greater impact on our meals than current ingredients from widely used GM crops have done in recent years.

We sometimes forget that GM crops can no longer be "new". Queues outside Apple stores in recent weeks by people wanting to be one of the first to secure a new IPad tell us that consumers do not view "new" as something that is fourteen years old! GM soybean, corn, cotton and canola now have a history in our crop production, food and feed sectors with GM soy, in particular, being widely used. Soy is used in foods including breads, pastries, snack foods, baked products, fried products, edible oil products and special purpose foods such as infant formula. It is also a valuable source of protein in animal feed rations. Over 75 per cent of the world's soybean production is now grown to GM varieties – this is a long way from shiny and brand new!

Setting aside the colourful language, let's examine the facts. The following table, drawn from the OGTR website, highlights the current GM wheat R&D underway in Australia. These are projects which have OGTR licences to undergo assessment in the field – referred to as field trials - many of which in their initial stages will be not much bigger than the average suburban backyard and will be conducted under strict conditions on R&D trial sites.

Entity	Licence	Crop	Details
Adelaide University	DIR 102	Wheat & barley	Enhanced nutrient utilization & abiotic stress tolerance
CSIRO	DIR 100	Wheat	Enhanced carbon assimilation in drought & heat prone environments
CSIRO	DIR 99	Wheat & barley	Growth & yield characteristics
CSIRO	DIR 94	Wheat & barley	Enhanced nutrient efficiency
CSIRO	DIR 93	Wheat & barley	Altered starch
CSIRO	DIR 92	Wheat	Altered grain
Vic DPI	DIR 80	Wheat	Modified for drought tolerance
Adelaide University	DIR 77	Wheat & barley	Enhanced tolerance to environmental stress or increased dietary fibre

While some of these field trials build on R&D conducted over the last decade, others are the result of more recent work and there is also the noticeable inclusion of research to address some of our current societal health challenges, rather than the more traditional focus on agronomic improvement. That said, one should not ignore the research being done to produce wheat and barley that is more water efficient therefore producing crops that perform better in our challenging dry conditions.

Greenpeace probably won't issue a statement to tell us that in the recent 2010 "Consumer Perceptions of Food Technology" survey conducted by IFIC (the International Food Information Council) in the United States of America, almost three quarters (73 per cent) of respondents said they would be somewhat or very likely to purchase food products – such as bread, crackers, cookies, cereal or pasta products – made with flour from GM wheat if it had been produced to "use less water, land and/or pesticides".

The GM canola experience has taught Australia a valuable lesson and one that will stand us in good stead for future GM crops. For every GM crop there are two parts – the science (incorporating crop performance, human health and safety, and environmental safety) and secondly, and equally as important, the market and trade considerations.

Australia has demonstrated its ability to address both parts of this equation. In relation to the science, plant breeders, technology developers and seed companies have ensured the delivery of new crop varieties with good agronomic performance, tailored to both specific conditions and regions. Australia's OGTR, considered to be the most stringent gene technology regulator in the world, has ensured that all approved GM crops pose no risk to human health and safety and the environment. And FSANZ has assessed and ensured the safety of all foods and ingredients derived from GM crops. Lastly, one that is often overlooked, the numerous entities and individuals that make up the Australian grain supply chain worked together, over a number of years, to ensure market and trade considerations were addressed prior to the commercialisation of GM canola. They have subsequently managed GM canola in the supply chain ensuring its successful commercialisation.

In 2009, Australia grew 41,000 hectares of GM canola in New South Wales and Victoria alongside other canola varieties in the supply chain. The industry introduced standards to accommodate the new GM varieties and the product was successfully grown, harvested and marketed. This same experience will be built on in the lead up to, and in preparation for, the commercialisation of GM wheat.

Last year, Australian entities – the Grain Growers Association, the Pastoralists and Graziers Association and the former Grains Council of Australia – joined with key organisations in the United States of America and Canada to launch a GM Wheat Trilateral Statement. This statement demonstrated strong support for GM wheat R&D and noted the importance of working together to address market and trade considerations. In the US, this statement was not only endorsed by grower organisations but also by the North American Millers' Association, recognising the need for ongoing innovation in the milling industry.

So, while this narrative doesn't have a multi-level headline, nor does it rely on colourful language and dramatic imagery – it is based on fact. GM wheat is some way from commercialisation and as those seven years draw closer, we can be confident of robust plant science, new varieties offering benefits to our farmers and consumers, and a grains industry with considerable experience to ensure a smooth path-to-market and the provision of choice in the marketplace. Let's hope data and evidence win on the day and misguided diatribe comes a distant last. In other words, let the facts tell the story!

In summary:

- While much GM wheat R&D is underway in Australia and around the world, GM wheat is at least seven years away from commercialisation.
- Field trials are an essential part in the development of all new plant varieties to assess the plants' agronomic performance in the paddock.
- Prior to commercialisation, GM wheat will undergo stringent scientific assessment to ensure its safety for human health and the environment.
- Beyond the scientific considerations, the global grain industry will work to ensure market and trade considerations are addressed.
- In 2009, Australia joined Canada and the United States of America to launch a GM Wheat Trilateral Statement. This statement (a) recognised the importance of GM wheat research and development, and (b) noted that the three countries would work together to address market and trade considerations, prior to GM wheat being commercialised.
- A recent survey in the USA showed strong support for GM wheat with almost three quarters of respondents indicating they would purchase products made with GM wheat, if the wheat was produced to use less water, land and/or pesticides.
- Australian has successfully grown GM cotton since 1996 and GM canola since 2008. The Australian agriculture sector will utilise this experience and build on its capacity and expertise in science and global trade to ensure the successful introduction of GM wheat in a timely and responsible manner.
- The progress being made in this area of agricultural technology in order to meet the globe's needs for food security and environmental sustainability are simply too important to be rejected on non-science grounds.