



GM Crops are still...

largely a story of the Americas

In 2014, **99% of all GM food is grown in the Americas** - less than 1% is grown elsewhere. 83% of global GM crop production was in the US, Brazil, Argentina and Canada. (ISAAA 2015)

In the five Asian countries growing GM crops, non-food crops (cotton) account for 96% of acreage. (ISAAA 2015)

just four commodity crops

Four commodity crops account for around 99% of GM acreage. (ISAAA 2013) Production of the other 6 crop types reportedly grown around the world (alfalfa, sugarbeet, squash, papaya, eggplant and poplar) ranges from modest to miniscule (just 12 ha of GM eggplant were grown in Bangladesh) (ISAAA 2015)

Commercially, the technology has remained largely confined to a **narrow set of crops** for well over a decade.

just two traits

Since 1996, commercial GM agriculture has relied on just two GM traits - **herbicide and insect resistance** - or a **combination of the two**. These account for 181 M of 181.5 million ha of GM crops grown. (ISAAA 2015)

Other traits promised – such as **drought tolerance** – have proved much more difficult to achieve. In 2014, just 275,000 ha of a GM corn marketed as drought resistant was reportedly planted in the US. According to the USDA, that corn **performs no better than conventional corn** bred to cope with dry conditions. (USDA 2011)

4

countries grow 83% of all GM crops

crops account for 99% of all GM acreage

Markets call the tune

No GM crops grown in New Zealand

It is widely agreed that the GMOs currently available are **not relevant to New Zealand conditions** (Straight Furrow 2012).

The primary reason that no GM crops are grown in NZ, however, is **consumer resistance to GM foods**.

Markets avoid direct human foods

GM crops destined for direct human consumption have foundered in the market (including wheat, potatoes, tomatoes and flaxseed). Most GM crops produced today end up as **animal feed; biofuel feedstock**; or in highly processed **food ingredients that do not need to be labeled**.

Europe still reluctant to grow GM crops

GM crop production in the EU 27 is tiny, with just one GM crop (an insect-resistant corn) grown over 143,016 ha, or 0.1% of global GM acreage. One country (Spain) accounts for around 92% of production on the European continent, with four other EU countries (Portugal, Czech Republic, Romania and Slovakia) growing the remaining 11.5 thousand ha. (ISAAA 2015)

Consumers still resist GM foods

GM foods remain highly controversial in the EU. Support for GM continues to decline in many EU countries, with opponents outnumbering supporters three to one across the EU. (European Commission 2010)

The **British Retail Consortium** believes that consumer attitudes to GM foods have not recovered from the slump in the 1990s. (BRC 2009)

NZTE analysis has found that sustainability issues such as GM content will remain important in the more affluent food markets for the foreseeable future. (NZTE 2011)

Increased labelling for GM animal feed

The trend is for **increased labelling where GM feed** has been used. In the last two years, **France** and **Germany** have introduced GM free labelling schemes for animal products; and major supermarket chains in **Italy, Switzerland** and **the UK** either prohibit the use of GM animal feed in their own brands or provide clear choice. This will bring new transparency in the European market, which currently imports significant amounts of GM animal feed. Voluntary GM labelling has proved just as deadly to GM products as government regulations.

GM Grasses and domestic GM crop development

Lack of industry support for trialling food crops

After more than three decades of public investment, domestic R+D has **yet to produce a commercial product**.

Two field trials are underway in New Zealand: AgResearch's GM livestock and Scion's GM pine trees.

Trials of GM vegetable and fruit are unlikely for the foreseeable future because **Horticulture New Zealand** has made clear that it **does not want to see GM horticulture crops**. (HortNZ 2009)

GM grass trials held up by lack of industry agreement, not legal barriers

GM grasses are running **10-15 years behind schedule** due to technical difficulties and will not be on the market until 2022 at the earliest. Only one variety - drought resistant ryegrass - has progressed to early field trials (in the US) and potential on farm benefits remain speculative. (Sustainability Council 2011; Straight Furrow 2012b)

A lack of support from the dairy industry to field trialling GM grasses saw Pastoral Genomics and AgResearch abandon plans to apply for regulatory approval for such activity in 2009. Fonterra was concerned that even small scale trials could negatively impact on market perceptions. It was also not confident that trials could be properly contained, a position the company publicly affirmed in late 2012 (Fonterra 2012; AgResearch 2011; Sustainability Council 2012)

GM grasses an all-or-nothing proposal

Government and industry agree that there is no way to contain GM grasses. As such, release (and some types of field trialling) of GM grasses is **an irreversible decision** that could ultimately affect all pastoral production – through market perceptions as well as in the supply chain.

Cisgenics is still GM... and will not be “invisible” in the market

GM grass developer, Pastoral Genomics, has tried to overcome consumer concerns by genetically engineering grasses using genes from the same species – a technique it calls cisgenics.

But **cisgenics is still GM and will not be “invisible”** as Pastoral Genomics suggests because genetic tests can reveal its presence. Powerful retail groupings such as GlobalGAP require disclosure of any GM feed used and it is the labels they apply to products that can unmask the use of GM grasses.

AgResearch. 2011. Statement of Corporate Intent 2011-2016
BASF. 2012. BASF to concentrate plant biotechnology activities on main markets in North and South America, January 16
British Retail Consortium. 2009. Submission to the House of Lords Science and Technology Select Committee
European Commission. 2010. *Europeans and Biotechnology in 2010. Winds of change?* Eurobarometer
Fonterra. 2012. The Future of Genetic Modification in New Zealand. *Radio New Zealand*, December 9
Horticulture New Zealand. 2009. Genetic Engineering Policy
ISAAA. *Global Status of Commercialised Biotech/GM Crops: 2014; Global Status of Commercialised Biotech/GM Crops: 2013*
NZTE. 2011. Sustainability: Market Perspectives
Straight Furrow. 2012. GM issue raises range of views. Sandra Finnie. August 13
Straight Furrow. 2012b. Dilemma over GM pasture research. Sandra Finnie. August 13
Sustainability Council. 2012. *Citizens' Arrest*. www.sustainabilitynz.org/docs/CitizensArrest_April2012FINAL.pdf
Sustainability Council. 2011. *New Zealand GM Pasture Grass R+D. Three programmes and a new technology*
www.sustainabilitynz.org/docs/NewZealandGMPastureResearch.pdf
USDA. 2011. *Monsanto Company Petition (07-CR-191U) for Determination of Non-regulated Status of Event MON 87460*

Updated January 2015