

Highlights Package

Hearing 8B: GMO, 30th January 2020

At The Waikato District Council Offices,

15 Galileo Street, Ngaruawahia

Prof Andrew Allan, School of Biological Sciences, University of Auckland

- There is now acceptable certainty of the safety of approved GMOs

The general scientific consensus of approved GM is that it is safe, as evidenced by the fact that internationally approved GM plants (or GMOs) are now 15% of planted arable land. These have improved the economies of regions, and have not caused any measured increase in detrimental outcomes to human health or the environment attributable to genetic modification per se. GM techniques have now been used for over 30 years.

One key term is “approved GMOs” – NZ’s unique HSNO act (1998) follows the precautionary approach in any application to develop (even in containment) or release a GMO. The EPA is tasked with examining all applications. The EPA is (and has been) extremely robust and thorough in its assessments of GM applications under the HSNO Act.

My opinion is that the evidence of the proponents of GMO provisions in the Waikato district plan does not provide any credible examples of risk or harm caused by an approved GMO which, from a scientific perspective, would warrant additional controls to those which might be imposed by the EPA. Studies and claims purporting adverse effects of GM plants have been widely discredited.

- Coexistence in Commercial Crops

Pollen spread and viability reduces over distance and thus coexistence can be managed to meet the standards set for international trade and markets. The effect on the value of some farming practices (e.g. certified organic farms) has been ameliorated in the USA where farmers have worked together using the best science to manage co-existence. In New Zealand seed purity successfully relies on industry codes of practice and good neighbours.

- There are emerging technologies of economic significance (eg. gene editing) which are less likely to be available in the Waikato if there are controls in the district plan which unnecessarily duplicate the EPA controls.

GMOs are defined by the HSNO Act as a new organism with altered DNA developed *in vitro*. However, DNA is modified by sunlight, by stress, and most commonly by reproduction. During plant/animal domestication of any one species tens of thousands of DNA changes have occurred, over a long time period. Gene editing can change single letters of DNA (one in hundreds of millions, in an organism). If “risk” is proportional to “changes in DNA” then gene editing is thousands of times less risky than traditional plant (or animal) breeding.

Gene editing offers precise improvements (in production and consumer traits) to plants and animals and does not necessarily add additional DNA. Gene edits, of a certain type, are unregulated in a number of countries, including Australia, so can compete with New Zealand’s products in international markets. In many cases it is not possible to tell a gene edited organism from a non-GM organism produced through traditional breeding.

Gene editing is defined as genetic modification in NZ. So, if approved for release by the EPA, such plants and animals will be much safer and less risky than those bred using traditional practices.

These improved genetics (generated by gene editing) are an essential tool in NZs response to climate change. Already there are (internationally) examples such as soybeans with healthier oil, hornless cattle, low-gluten wheat, disease-resistant rice, and wheat with a 27% increase in grain weight. As examples of the ‘safest’ type of GMOs (GM as defined by the HSNO Act but not by, for example, Australian legislation), in my opinion the proposal to ban the use of EPA approved gene editing in the Waikato District fails to have proper regard to the real risks associated with such an EPA approved use.

Andrew Allan

30 January 2020.