

Submission to
**The House of Representatives Standing Committee on Primary
Industries and Regional Services**
Inquiry Into Primary Producer Access to Gene Technology

Prepared by

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This submission has been prepared to provide the standing committee with an introduction to research that is being conducted into improving public awareness and product development strategies for Genetically Modified Organisms (GMOs) in the grains industry. Two of the eight terms of reference will be addressed, namely:

- a) ***The future value and importance of genetically modified varieties;***
- b) ***Opportunities to educate the community of the benefits of gene technology.***

1. *The Significance of Biotechnology*

The importance of gene technology to Australian agriculture and the likely benefits are well recognised. The Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ), at its February 1998 meeting, identified gene technology as:

... the agent that would significantly change production systems and markets for agricultural products, and facilitate agricultural sustainability and resource management.

(DPI&E, 1998)

In their submissions to the Australia New Zealand Food Standards Council (ANZFSC), life science companies (chemical companies) *DuPont/Pioneer, Monsanto, AgrEvo, Rhone Poulenc* and *Novartis* are seeking approval for the inclusion of 20 genetically altered varieties of soybean, canola, corn, potato,

sugar-beet and cotton to be included as foods available for sale in Australia and New Zealand (Australia New Zealand Food Authority (ANZFA), 1999). The traits that have been introduced or enhanced in these plants are listed as herbicide tolerance, insect resistance and functional food qualities such as soybeans high in oleic acid. Clearly, crops with traits of this type have the capacity to change production systems and the marketing of agricultural crops, and their future value and importance will be significant. The Food and Agriculture Organisation (FAO) of the United Nations highlight some of the benefits:

Biotechnology could help solve many problems limiting crops and livestock production in developing countries. For example, biotechnology-derived solutions for biotic and abiotic stresses, built into the genotype of plants, could reduce use of agrochemicals and water, thus promoting sustainable yields.

(FAO, 1999)

In Australia biotechnology offers the prospect of reduced tillage and subsequent improvements to fragile soil structure. Transgenic varieties may allow less insecticide to be used in farming practice. The health of riverine systems and water quality might be improved, while the potential benefits offered to consumers through novel or functional foods are considerable, including the potential to deliver better quality food with less processing and additives.

2. Consumer Reactions

With the huge investment worldwide by multinational companies it might seem certain that the above-mentioned benefits are assured. However, there may be some doubt about this. *Resolution 3C* outlined the position of ARMCANZ with respect to associated risks stating that:

Products with unacceptable risks will need to be prohibited from sale or allowed for sale only if they comply with specific restrictions. They will also need to be differentiated from products that pose little or no risk.

ANZFA received submissions on the release of six genetically modified crops late in 1998 to allow them to be used in food for Australian consumption. Further, ANZFA have also recently announced changes to labelling laws to account for the introduction of genetically modified foods.

Policy deliberations such as those outlined above are currently raising the awareness among consumers of biotechnology in agriculture and the presence of GMOs in their food purchases. In Europe, Japan and the USA, where genetically modified products are appearing on supermarket shelves, research into the reactions of consumers shows many differences between consumers in the same, and in different, countries (see Hoban, 1997; Weinhandl, 1998; Hoban, 1996 and Frewer, Howard and Aaron, 1998). The response of Australian consumers to the introduction of GMOs in

foodstuffs is largely unknown but, as the European experience demonstrates, increasing public concern over the safety of genetically modified crops can place on the political agenda proposals with a potentially enormous cost to agriculture, such as the calls for a three-year moratorium on planting of genetically modified grain and oilseed crops in the United Kingdom (Reuters, 1998).

Aside from concerns raised over food safety, the 'moral hazard' associated with the biotechnology business is receiving increasing media attention. The debate surrounding 'terminator technology' (genetically engineered crops which cannot reproduce fertile seeds) has increased to the point that the aid organisation Christian Aid has called for a five year freeze on genetically modified crops (Vidal, 1999). They claim that the concentration of control over seed supplies by a small number of powerful transnational corporations is a threat to food security in developing nations. Woolfe, (1999), reports on the results of unpublished research commissioned by British Ministers in the Blair Government. The report written by biotechnology and agriculture experts at the John Innes Centre in Norwich warns that organic crops are certain to be contaminated by GM plants because their pollen can spread far beyond the boundaries of fields. These are examples of the concerns or risks that are becoming associated with genetically modified food.

3. The Research

The research being conducted at the Rural Development Centre¹ seeks to understand how consumers see the various benefits and risks associated with the technology. Consumers are not a homogeneous group and failure to recognise this will result in the potential acceptance of genetically modified food being reduced. In forming attitudes and perceptions, consumers refer to their beliefs about products and their social values. Beliefs include those capable of being verified as true or false, and those where a concept is judged to be good or bad, while values are prescriptive or proscriptive beliefs where a course of action or state of affairs is judged to be desirable or undesirable. For example, consumers might have a belief that a particular GMO in their food will lead to genetic damage to themselves, a belief that can be empirically demonstrated as incorrect. Consumers might also place value on having the right to be informed about the composition of processed foods they purchase, a social value that is not capable of empirical verification.

Importantly, values are unlike other beliefs in that they tend to be acquired at an early age and are more strongly held. Values are therefore much harder than other beliefs to change. Whereas beliefs that can be verified as true or false are amenable to change by the provision of information to the consumer, this approach has little effect on consumers' values. Another important characteristic of values is that they are consciously or sub-consciously ranked so as to strongly influence the processes that are employed when decisions are made. Inglehart (1990) has shown that values and beliefs tend to form coherent patterns such that consumers can be grouped as having traditional, modern or post-

¹ The results of this study will be finalised in the first half of next year.

modern value systems. Given similar access to information about GMOs, consumers within a particular group are likely to respond to the introduction of novel foods in a similar way. For example, among those with a post-modern value system, religious and bureaucratic authority, science and technological development are discounted and distrusted. People, community, the environment, independence and tolerance are highly valued. Self expression and fulfilment in meaningful work are more important than maximising economic gain. There is disillusionment with institutionalised politics and growing acceptance of 'community' as a legitimate source of authority. Food safety concerns for this group could be a highly motivating factor against purchasing products containing GMOs given their distrust of science and bureaucratic authority, which are the main sources of factual information in this area. This means that although consumers may traditionally be positioned in the market in terms of their stage of life-cycle, income level or geographic location for example, these factors may be secondary to their social values when making decisions about novel and genetically modified food products.

Segmentation of consumers is often tied to personal and situational influences such as those outlined above. The research being conducted at the Rural Development Centre examines the use of social values in explaining consumers' perceptions and attitudes towards the benefits and risks associated with GMOs in food products. It is also investigating the characteristics consumers associate with genetically modified food products and other processes used to alter food such as irradiation, hormone growth promotants, antibiotics etc. A working knowledge of how consumers assess the benefits and risks associated with GMOs to form attitudes regarding their suitability as consumer goods will be of great value in designing marketing strategies that promote benefits and address the concerns of consumers.

Attitudinal research into GMOs in Australia is in its infancy. Given the scarcity of reliable information available to the public, much has centred on consumers' attitudes towards science and technology. The International Social Science Survey. (ISSS) study conducted in 1994 finds a positive association between people with a distrust or lack of knowledge of science and those who believe that the risks associated with biotechnology outweigh the benefits. It was found that an improved knowledge of what constitutes genetic engineering would improve consumer weighting of the risks and benefits in favour of same. Norton and Lawrence (1998, 7) found however, that:

... what the focus group research demonstrates is that the more consumers come to learn about the new technology and its applications, the more suspicious they become.

This establishes the need to understand why consumers become 'more suspicious'. The 1998 National Association for Crop Protection and Animal Health (AVCARE) 'Facts & Figures' summary of a survey of 500 consumer attitudes towards gene technology reflects quite positive attitudes,

however the report identifies 81 per cent of respondents knowing very little about gene technology (AVCARE, 1998). These Australian studies comprise the main body of quantitative knowledge regarding Australian consumer attitudes. The results highlight the low levels of knowledge about GMOs held by consumers.

Internationally, Hoban (1996) has found that Japanese consumers wanted information on the effects of biotechnology on themselves and the environment, while Frewer, Howard and Shepard (1996) in a study of European consumers indicate that tangible benefits associated with individual food products will define the acceptability of products rather than attitudes toward biotechnology. Hoban and Katic (1998), found that there is a continuing need for consumer education to increase the knowledge of American consumers. This study found that taste; price, safety and convenience were more highly involving issues for consumers. Frewer, Howard and Aaron (1998) took the issue of education and pointed to the communication of risk as being important. Their findings suggest that consumers' perceptions of risk are 'driven by attitudes linked with specific applications of genetic engineering' (Frewer *et al.*, 1998, 392).

4. Concluding Comment

In relation to the Australian situation, there is a gap in the understanding of consumers' knowledge of the risks and benefits associated with GMOs. Primarily, this is because until now, reliable information has been difficult for consumers to obtain. This situation is changing, which must signal to producers that they need to adopt sophisticated approaches to understanding their end markets and matching their products to consumer demand. Failure to address consumers' concerns could see deterioration in the demand for products derived from genetically modified crops.

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