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## Introduction

Avcare is pleased to make this submission to the discussion paper and would welcome being involved in the proposed further stakeholder discussions on this matter. This submission has been developed with input from Avcare biotechnology company members.

Avcare is the peak industry body representing the interests of companies who are providers of modern biotechnology either directly or through subsidiary companies. Avcare members involved in biotechnology are:

AgrEvo  
Cyanamid  
Dow AgroSciences  
DuPont

Fort Dodge  
Hoechst Roussel  
IAMA  
Monsanto

Novartis  
Nufarm  
Rhône Poulenc  
Wesfarmers

We refer you also to individual submissions made by our members who have considerable experience and information regarding the development and successful commercialisation of agricultural products derived by modern gene technology both in Australia and overseas. Also we draw your attention to the submission made by the Agrifood Alliance Australia (AAA), of which Avcare is a member, which focuses especially on the communications aspects of your inquiry.

In this submission, we would like to draw your attention to the range of issues that will affect primary producer access to gene technology from our members' perspective, as such we offer an overall summary of their views under the various areas being addressed by the Inquiry.

As well, Avcare, on behalf of members invites Committee members on a field visit to personally see gene technology derived products in production and to also hold meetings with field experts on scientific, technological and operational issues pertaining to the safe and responsible marketing of the products of gene technology.

Avcare will make contact with the Committee Secretariat separately to follow up this offer.

***What is biotechnology:*** *the harnessing of natural biological processes of microbes and plant and animal cells, for the benefit of mankind. Man has been using biotechnology for thousands of years. For example to breed and select superior plants and animals, to bake bread, brew beer and make cheese. However, the techniques of modern molecular biology (bio-engineering) have opened up new possibilities. Genetic change can now be induced more rapidly and be more precise in their outcome.*

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## 1. *The future value and importance of genetically modified varieties*

Whilst the benefits of biotechnology have been evident for centuries, the new tools of biotechnology, such as gene technology have the potential to deliver even greater benefits such as:

- improved food quality and nutrition
- improved livestock feed quality and nutrition
- animals that are less prone to diseases
- production antibodies for use in human and stock medicine
- more efficient agricultural crop production through reduced fertiliser input by enabling plants to obtain their own nutrients from the soil or atmosphere
- more efficient animal productivity in key areas like meat, milk and egg production whilst making the most use of our feed, fodder and pasture resources
- a source of industrial raw materials such as plastics thereby reducing the dependence on fossil fuels
- bioremediation for contaminated sites

There is much speculation here. However the point has already been reached where the genetic engineering of plants is leading to crops with increased yields and improved quality and crops which require less pesticide inputs.

The goal of agricultural biotechnology developments today is more effective and sustainable crop and livestock production. Genetically modified crops which are resistant to insects, or diseases will provide farmers with a key tool to effectively combat a pest problem that is costing the nation an estimated \$3.1 billion per annum from insect damage alone. Herbicide resistant crop varieties increase the range of weed control options available to farmers, allowing the efficient and economically viable use of arable land. For example, canola is emerging as a successful, globally competitive new industry but unfortunately has a limited growing geography due to the lack of certain weed control options.

The benefits of the current commercially available products of biotechnology are:

- Decrease in the amount of crop protection chemicals used (eg at least 50% reduction in the use of insecticides in cotton production).
- greater use of integrated pest management techniques through the use of pesticides that are safer to beneficial insects.
- wider use of pesticides that are less potentially harmful to the environment.

The benefits of course must be weighed against the costs, which will require fundamental value judgements. There is no straightforward way of doing this hence the controversy about the ethics of biotechnology.

Straughan and Reiss (1996) in their *Ethics, Morality and Crop Biotechnology Paper* sponsored by the Biotechnology and Biological Sciences Research Council, UK, argue that “*failing to proceed with promising technologies may be as morally*

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*wrong as running the risk of producing undesirable consequences". They support this argument with the statement that "the possible harmful effects of crop biotechnology are entirely speculative: no instances have occurred in practice. Unlike most new technologies in their early states of development, modern biotechnology has so far proved to be remarkably safe". There is no evidence that this status has changed in the ensuing four years.*

## **2. The ability for producers to compete using traditionally available varieties**

Gene Technology is not however a "silver bullet". Agricultural sustainability is enhanced if farmers have access to a wide range of crop protection and animal production tools. Gene technology can provide new solutions as part of an integrated crop (or animal) management systems approach. This means that in addition to gene technology, conventional breeding, traditional pest control methods, prescription farming and permaculture approaches will all contribute to produce the best outcome for Australia's primary producers.

Gene technology will create benefits for all farmers and is an important tool for increased global food production and advancement of sustainable agricultural practices. Many of the issues created are shared with novel products produced by conventional methods especially some herbicide tolerant crops. Products of gene technology should therefore not be unduly disadvantaged by lack of Government support and unnecessary scrutiny in a competitive marketplace.

Access by Australia's farmers to advances in gene technology is essential for improved productivity and sustainability. These tools are currently available to their major competitors. Rapid and decisive action is required by Government to ensure that Australia is not disadvantaged internationally both as a technology provider and technology user.

## **3. The commercialisation and marketing of agricultural and livestock production varieties**

Commercialisation of the products of modern biotechnology in Australia are currently being hampered by the lack of a clear regulatory path to commercialisation. Namely there is no clear path to allow approval of the introduction of herbicide tolerant crops.

Avcare has been actively discussing with government and the Genetic Manipulation Advisory Committee (GMAC) strategies for the successful commercialisation of herbicide tolerant crops. A way forward is now possible with the endorsement of good agricultural practice for the introduction of genetically modified crops and pastures by the Standing Committee for Agricultural Resource Management (SCARM). Several such products of gene technology are reaching large-scale release and preparations are ensuing for commercialisation.

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#### **4. *The cost to producers of new varieties***

Competitiveness in food production for both domestic and international trade is an important driver for ensuring access to new tools including gene technology. Such tools will not become established unless they offer clear advantages over existing options, be it on price or performance.

There are of course worries about the degree of profit-motivated “control” being exercised by agro-chemical companies over farmers. In addition, there is the emotive and complex issue of intellectual property (this will be addressed in a later section of this submission). History has demonstrated how all-new technologies inevitably have far-reaching socio-economic effects. Biotechnology cannot, then, be singled out as the sole target for moral censure on these grounds any more than can information technology or the development of the combustion engine.

Whatever the technology, farmers have the choice of adopting new technologies or not. Adoption inevitably depends on the creation of value to the user. If new technologies create value, farmers will use them, otherwise they will retain current approaches.

#### **5. *Other impediments to the utilisation of new varieties by small producers***

Small producers (farmers) are unlikely to be disadvantaged, as the commercial success of the products of modern biotechnology will rely on being competitive with alternatives.

#### **6. *Assistance to small producers to develop new varieties and the protection of the rights of independent breeders, in relation to genetically modified organisms***

Small producers have the same opportunities to capture value from their intellectual property as large corporations or government funded institutions. Australia has comparatively strong protection of the rights of plant breeders through its intellectual property legislation. Many small seed breeding companies compete very effectively with Government funded institutions, eg Heritage Seeds, Wrightson Seeds and Henderson Seeds.

The claim that genetic resources are being captured by a privileged few needs to be put into perspective. Ownership is of the invention itself not of the living matter. In the case of crop biotechnology a patent would imply ownership not of a seed or a plant but of the invention of the “genetic kit” which produces a particular attribute of that crop. For example the technique to insert a gene into a plant is patentable but not the plant itself. A particular gene is patentable but not the plant itself. Genetic resources remain free for all to use and benefit from in the sense that they are present in the natural world without a price label.

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It is possible in the future, that appropriate minor use programs such as those being developed for agricultural chemicals will need to be determined for applications of gene technology that are not currently supported by global priorities. Further novel alliances of research and commercialisation organisations will encourage these developments provided the appropriate policy and financial incentives support them.

Control of genes in plants requires several pieces of technology and no groups in Australia have the capacity or ownership of all the technology required to take a product to market. However that does not prevent Australian organisations from participating in the Australian market.

For example, INGARD® cotton was developed by CSIRO and DeltaPine using Monsanto's INGARD® technology. CSIRO have also patented a gene that controls the browning process in many fruits and vegetables. They have licensed this for use in bananas to Zeneca Ltd for worldwide use.

The contract requires Zeneca to make these new bananas available to Australian growers as soon as they are available in the marketplace and, on terms that are at least as favourable as anywhere else in the world.

This example demonstrates how local Australian companies/organisations can participate in the biotechnology revolution and use their intellectual property to lever a position for Australia.

## ***7. The appropriateness of current variety protection rights, administrative arrangements and legislation, in relation to genetically modified organisms***

New alliances and partnerships between academia, traditional breeding and pure research organisation and both small and large corporations throughout the gene technology stakeholder chain are occurring rapidly around the world in order to support the responsibilities and costs of gene technology R&D. Australia is no exception. Regulatory clearances and intellectual property freedom to operate issues must be addressed at a global level in order to successfully commercialise the products of gene technology. Global approvals must encompass assessment of environmental, food and feed safety as well as consideration of import issues where commodities are moved from country to country, mixed and eventually processed.

### **(i) Legislation**

Avcare supports regulation of gene technology to provide appropriate safeguards; public confidence through access to meaningful information from appropriate public consultation mechanisms; and to allow development and application of the technology for the benefit of Australian agricultural and livestock production systems.

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Avcare views as vital and long overdue, the establishment of a comprehensive and integrated regulatory system which delivers certainty for industry and farmer decision making and ensures public confidence in the safety and use of gene technology in Australia.

Avcare encourages international harmonisation of regulations for gene technology and has also been involved in consultations on the Biosafety Protocol and the OECD Harmonisation Program. The implications for world trade and biotechnology will be felt at a local level. National policies regarding gene technology must be mindful of Australia's international obligations particularly those of the WTO where further negotiations are scheduled for later this year.

**(ii) Intellectual property (variety protection rights)**

Avcare supports a policy environment that encourages investment in research and development (R&D) and the introduction of new products for plant and animal production. This environment should not only encourage the introduction of gene technology into Australia, but lead to the development of wealth generating, locally based gene technology industries.

Development of new varieties enhanced by gene technology can be protected in the same way that conventionally developed varieties are subject to plant variety rights and plant breeders rights. Application of this legislation and the administrative arrangements supporting it should not distinguish between GM and non-GM plant varieties. Companies offering products of gene technology to the market will need to capture some of the benefit in order to cover the costs of development, stewardship and fund further R&D. Avcare supports the current Australian legislative arrangements for patenting biological innovations, plant variety and breeders rights (for which some refinement is called for), which allow practical and competitive solutions from a fair, international playing field. Avcare consults with and supports the activities of the Seed Industry Association of Australia in this area of intellectual property.

**8. Opportunities to educate the community of the benefits of gene technology**

Avcare supports a credible, independent Government coordinated public information program that will address community concerns regarding gene technology and provide balanced, factual information to the public and the media. The information challenge must also be met on a range of other levels including the efforts of Biotechnology Australia and complementary communications activities undertaken by Agrifood Alliance Australia (AAA), CSIRO and the Australian Food and Grocery Council (AFGC). Avcare and its members are actively involved both within and beyond the gene technology industry to ensure rational debate and encourage an informed community.

The full benefits of biotechnology will only be realised if consumers and the food industry accept the use of these new technologies as safe and beneficial. Thomas

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J. Hoban from North Carolina State University, a world renowned expert in managing change has summarised several major global surveys on consumer attitudes to biotechnology and concludes in his paper *Trends In Consumer Attitudes About Agricultural Biotechnology* the following:

*Results of this and other research indicate that biotechnology will not become an issue for most American, Canadian, or Japanese consumers. American consumers (as well as many others around the world) are optimistic about biotechnology. They will accept the products if they see a benefit to themselves or society; and if the prince is right! Their response to foods developed with biotechnology is the same as for other foods. Taste, nutrition, price, safety and convenience are the major issues. Biotechnology will remain an issue in some parts of Europe, at least over the short-term. However, the opposition there should fade with time, as more products arrive on the market that are clearly beneficial to consumers.*

*Further analysis of the survey shows that consumer acceptance of biotechnology is driven by a number of inter-related factors. First there needs to be a demonstrable benefit from the application, as well as an acceptable (that is, low) level of risk. It is also very important that the applications are viewed as morally acceptable to society. People need confidence in third party experts.*

*Given the low levels of public understanding, more education will be important as more new products become available. The public needs to recognise that the products of biotechnology have benefits. They should come to believe that the applications of biotechnology are morally acceptable and safe. The ethics of feeding the world, while protecting the environment could also influence some consumers' attitudes. It will also be important to ensure that government regulations are in place to minimise any risks.*

*Additional analysis of the latest international surveys will be helpful. This would help to systematically evaluate the factors that influence public attitudes, as well as the causes and nature of differences among countries. Additional research on this topic will also be important. In particular it would be very helpful to have a systematic comparison between public attitudes and those of key leaders from government, industry and other areas.*

*Several reasons can be suggested for the differences observed between various countries. Media coverage and activist opposition has been most pronounced in those countries where survey respondents were more negative. In general, controversies have been more visible in Germany, Austria, Sweden and Denmark than in other countries. The benefits of biotechnology have not generally been recognised, while the potential risks have been emphasised. There are also a number of fundamental cultural differences (especially between some of the European countries and North America). These and other issues need careful attention.*

Avcare believes that consumers need information about gene technology and the information should be able to assist in their decision making and be based on



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science to satisfy public health and safety principles. Labelling of GMO food alone will not achieve an informed public. Avcare and its members are actively seeking pragmatic and effective solutions to ensure an informed, supportive community from the farmers through to the consumers.

Farmers require access to information and education about gene technology in order to make the best decisions for their production systems. The farm chemical user training program and Agsafe premises and personnel accreditation systems provide unique and successful models for enhanced awareness and responsible care of the tools available for crop and animal production. Avcare supports the development of best management practices and accreditation/certification programs to assist the stewardship and successful capture of the benefits of gene technology by Australia's farmers and their suppliers.

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## Readings

Nigel Steele Scott, CSIRO Plant Industry, Horticulture Unit, North Queensland *Biotechnology Success and Failure in Crops* (Horticultural Journal June 1999)

Roger Straughan and Michael Reiss (1996) *Ethics, Morality and Crop Biotechnology* paper sponsored by the Biotechnology and Biological Sciences Research Council, UK

The Royal Society Statement *Genetically modified plants for food use* September 1998  
(<http://www.royalsoc.ac.uk/rs/>)

John Freivakls and Daryl Natz *Overcoming Phood Phobia*, Communications World magazine June-July 1999

Thomas J. Hoban, North Carolina State University, *Trends in Consumer Attitudes about Agricultural Biotechnology*  
(<http://www.agbioforum.missouri.edu/agbioforum/vollno1/hoban.html>)