REPORT OF PROCEEDINGS BEFORE

STANDING COMMITTEE ON STATE DEVELOPMENT

INQUIRY INTO GENETICALLY MODIFIED FOOD

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At Sydney on Tuesday 21 March 2000

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The Committee met at 9.30 a.m.

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PRESENT

The Hon. A. B. Kelly (Chairman)

The Hon. I. Cohen
The Hon. J. R. Johnson
The Hon. Dr. B. P. V. Pezzutti

HELEN SCOTT-ORR, Executive Director Research, Advisory and Education, New South Wales Agriculture, of Milthorpe, affirmed and examined:

LINDSAY JOHN COOK, Chief, Division of Plant Industries, New South Wales Agriculture, of Orange, and

RICHARD ALAN SPURWAY, Deputy Chief, Division of Plant Industries, New South Wales Agriculture, of Orange, sworn and examined:

CHAIR: Have you received a summons issued under my hand in accordance with the Parliamentary Evidence Act 1901?

Ms SCOTT-ORR: Yes.

Dr COOK: I have.

Dr SPURWAY: I have.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Ms SCOTT-ORR: Yes.

Dr COOK: Yes.

Dr SPURWAY: I am.

CHAIR: If any of you should consider at any stage that in the public interest certain evidence and documents that you wish to present should be heard or seen only by the Committee, the committee will be willing to accede to your request. However, I have to warn you that Parliament can override our decision to make anything confidential and can release it at a later stage.

Would you like to make a statement first before we begin questions?

Ms SCOTT-ORR: Mr Chairman and members of the Committee, before presenting my opening remarks I would like to take this opportunity to thank the Committee for its invitation for New South Wales Agriculture to appear. In this opening statement I will highlight the department's response to the specific terms of reference for the inquiry.

As a major provider of knowledge and services to the agricultural food and fibre industries of this State, New South Wales Agriculture has a strong interest in ensuring that public debate on any issues involving genetically modified foods is well informed. The department is working in partnership with the private sector and with other government agencies to enhance the domestic and international competitiveness of our agricultural industries, and thereby their

contribution to the economy and prosperity of this State. New South Wales Agriculture is also an important vehicle for the delivery of the Government's commitment to more sustainable agricultural systems, which have the potential to incorporate new technologies in the fight to conserve the natural resource base and protect the environment for the wider community of New South Wales.

As you would be aware, genetically modified or GM has become the term used to describe food produced by plants, animals or micro-organisms which have had genes inserted by means other than conventional breeding. The growth in knowledge of how genes work has enabled scientists to identify specific genes in the DNA genome of one species and insert them into the genome of another species. The inserted genes can be demonstrated to produce a desired response in the genetically transformed or modified individual. Genetic modification or GM technology has enabled the production of commercially valuable characteristics in plants, animals and micro-organisms which would be impossible to achieve through traditional breeding processes. The possibilities for the adoption of this technology are, of course, immense.

I would like to point out that a large number of widely applied commercial applications for GM technology already exist from the genetic modification of micro-organisms. These applications range from the biomedical—with production of reagents such as antigens for cheap and reliable medical and veterinary tests—the development of vaccines and pharmaceutical products, through to the development of bacteria capable of rapidly decomposing waste substances and—importantly for the food industry—the production of large quantities of enzymes or organisms for use in food processing or for the production of cheeses, beer and other fermented products. Likewise, applications for GM technology in plants have not been limited to food producing plants. For example, there exists the exciting potential for the development of plants that can better extract industrial pollutants from the air or soil, which would have the potential for bio-remediation of contaminated sites. Of course, this inquiry is specifically addressing issues relating to genetically modified foods—in particular, the benefits, costs and impacts of the introduction of genetically modified food technology.

In our written submissions, provided earlier to the Committee, the department also touched on two important issues not raised directly in the terms of reference to the inquiry. That is the regulatory framework and the issue of mandatory labelling of GM foods. As members of the Committee would be aware, the Commonwealth Government in liaison with the States and in consultation with the public has been developing a comprehensive regulatory regime to ensure that the community's concerns over the safety of this new technology for human health and the environment are satisfied. This legislation is due to commence in January 2001. The issue of whether to require all food containing any GM component or ingredient to be labelled as such, or to allow exemptions for small proportions of GM ingredients, is also on the agenda for the Commonwealth and State governments and is still under discussion. The outcome of that debate will have a significant bearing on the costs of introducing GM food to markets.

The department believes that the very nature of GM technology ensures that assessing the benefits, risks and the costs associated with adopting this technology needs to be done on a case-by-case basis. Those who advocate the use of this technology point to a range of specific benefits and beneficiaries for each application. For example, the production sector may benefit

from reduced production costs, increased productivity, or higher prices for produce. Some GM foods will also offer benefits to food processors in the form of lower input prices and better quality product, by allowing the sourcing of produce with different quality attributes, lower processing costs, or from marketing higher priced products. Again, retailers may benefit from lower priced inputs, products for which the public is prepared to pay a higher price, by offering a wider range of products, or by offering new products. Consumers may find cheaper food, better quality food or food with an enhanced nutritional or medicinal value.

Other benefits to the wider community could accrue from food production systems which have less harmful environmental impacts: for example, from the use of pest or disease resistance plants which require less or no pesticide, or from the use of plants which may have a positive environmental impact, such as salt tolerant plants. Determination of the impact of genetically modified organisms on human health and on the environment should be subject to a rigorous, scientific risk assessment in the same manner as the claimed benefits. If we accept that the development of a national regulatory framework can ensure that the community's concerns over the safety of this new technology for human health and for the natural environment are satisfied, then there still exists the potential for significant costs to the community from the introduction of the technology.

The most significant costs, both public and private, revolve around labelling requirements. Labelling requirements will introduce the need to develop and maintain separate production, handling and processing streams for GM and non-GM food. Each stream will require its own quality assurance scheme to ensure the integrity of the GM or non-GM status of the end product. In fact, it is likely that there will be a multitude of such quality assurance schemes, with large processors and retailers having to be satisfied about the integrity of the product they produce or sell. It is likely that along with these quality assurance schemes testing programs will have to be developed to assure product integrity.

If labelling and segregation of product streams are required, costs will be incurred both by GM producers and by producers of non-GM food, who will have to prove that their products are not mixed with GM products. Farmers not using GM crops may nevertheless incur substantial costs. These spill-over costs have the potential to be widely distributed. While most of these costs will be private and ultimately borne by the consumer, there will also be some direct public cost for monitoring and verification of compliance with the labelling requirements. Recent estimates of the impact of these costs are quite high. For example, the preliminary study of compliance costs undertaken by KPMG last year estimated that the proposed Australian mandatory labelling scheme would push up food prices by 5 to 12 per cent.

Quantifying the costs is difficult. While it should be possible to estimate the costs of separate handling and processing systems on an industry-by-industry basis, the costs would only be approximate, as efficiencies may be possible once such systems are in place. The impact on trade of the uptake of this technology is uncertain. Adoption of GM crops has been rapid in some countries and non-existent in others. Whilst the adoption of GM crops has been high in the United States, Canada and Argentina, consumer concerns and a reluctance to either produce or supply GM foods have arisen on a significant scale in Western Europe, Brazil and, to a lesser extent, more recently in Japan and South Korea.

There may be some industries where it may not be in the national interest, from a trade perspective, to produce GM food. However, for other industries there may be very positive economic benefits from producing both GM and non-GM food, and from meeting the cost of developing and maintaining separate production handling and processing streams. These issues should be resolved by the industries following informed discussion and debate with all groups who may be affected.

In conclusion, New South Wales Agriculture considers that the debate on whether GM foods will provide an overall benefit or cost to the community needs to be considered on a case-by-case basis. GM technology is already widely used in other applications, in particular, the biomedical field and in food processing. The use and further development of GM products will continue to be an issue and it is essential that widespread and informed community debate and participation in the decision making processes occur. This will ensure that the benefits of GM technology to the community of New South Wales will be maximised and the detrimental aspects minimised.

Thank you for your attention and the opportunity to present this summary to you. It may assist the Committee if I introduce the other panel members representing New South Wales Agriculture. Dr Lindsay Cook is the chief of the department's Division of Plant Industries. Most of the developments in the application of GM technology in foodstuffs have occurred in the plant rather than in the animal-based food industries. As the head of the department's plant industry division, Dr Cook has kept a watching brief on the development and application of GM technology across a wide range of agricultural plants.

Dr Richard Spurway is Deputy Chief of the department's Division of Plant Industries and is also the manager of the department's programs for fibres, oilseeds and specialty crops. Dr Spurway has responsibility for the delivery of research and advisory services to broadacre cropping industries such as cotton, canola and soybeans. Whilst GM cotton is the only GM crop that has been publicly released in Australia, internationally large areas of GM cotton, canola and soybeans have been grown for a number of years.

CHAIR: You mentioned the cost of labelling. In a report last year, KPMG suggested that the cost of food could rise by 5 to 10 per cent. Could you provide us with a copy of that report?

Ms SCOTT-ORR: It is available on the Internet. Perhaps we could give you the reference.

The Hon. Dr B. P. V. PEZZUTTI: Currently there are a large number of identified streams in the food market, such as organic versus non-organic, foods from certain districts, foods which carry a particular label, for example, the chiquita banana. Although the consumer may not differentiate the chiquita banana from another brand of banana, the chiquita banana is particularly labelled. If you try to sell a banana as a chiquita banana when it is not, then you could have problems.

The Hon. J. R. JOHNSON: Like King Island cream.

The Hon. Dr B. P. V. PEZZUTTI: Exactly. There are a large number of streams. Why will genetically modified or non-genetically modified labelling cause problems when labelling is used as an advantage, and the use of another company's label is considered to be pinching that advantage?

Ms SCOTT-ORR: I will answer and then ask Lindsay or Richard if they might like to add anything. One of the main issues is that crop grains particularly have not necessarily been well differentiated and the bulk handling arrangements through silos and so on leads to mixing. The provision of infrastructure right through the chain from the farm through to storage, transport and then processing requires extra differentiation and is likely to put an extra load of segregation on the food processing system.

The Hon. Dr B. P. V. PEZZUTTI: My colleague the Hon. I. Cohen reminds me that there are some biodynamic grains and organic grains that are being used and marketed in such a way. Why does that not cause a problem?

Ms SCOTT-ORR: The cost of those is generally higher. There is a premium for those grains that helps to defray the costs. However, a lot of the early GM crop modifications are aimed at making the cost of production and the grain cheaper. The perception in America is that a cost reduction has already resulted from the widespread introduction of GM crops. However, there may now be a requirement for segregation of the crop, which was going into an undifferentiated stream. There are two ends: the low-cost and the high-value niche markets. Putting that extra segregation on the low-cost end of the market would offset the production cost benefits of technology.

The Hon. Dr B. P. V. PEZZUTTI: Surely the number of GM modifications in broadacre crops, such as wheat, could be tested. There are case-by-case considerations. The insertion of the colour blue into carnations was particularly advantageous.

Ms SCOTT-ORR: They are niche markets.

The Hon. Dr B. P. V. PEZZUTTI: Research into a broadacre crop, requiring vast amounts of money, can be widely spread and amortised. However, research into the GM modifications of a blue carnation is spread over a small market. How do we ensure that the research is adequate, appropriate and not too expensive so that products such as a purple carnation can still come on the market?

Dr COOK: The distinction is that a blue carnation identifies itself. It does not need any other stream. It is clearly identified through the marketing chain; it is identified visually and does not require anything else. Fruit and vegetables are food effectively from the time they are harvested. It is relatively easy to label and maintain them separately through the handling chain to the retailers. However, when we talk of wheat or canola, we are talking of the handling arrangements, the differential binning at receival points throughout the countryside, which is an inefficient means of storing grain. If you have four bins at a country silo, you can really only

segregate four different grades of wheat or, in this case, two different GM and two different non-GM.

Ms SCOTT-ORR: You should use canola as an example, because GM wheat is not on the agenda.

Dr COOK: I use wheat as an example because people can understand what happens to wheat when it goes into silos. Then you need a different train system to carry the wheat to where it is going, whether to be exported through the export terminal or to the domestic miller. The domestic miller needs a separate handling system to store that on site and a system to ensure that the processing is cleaned between GM and non-GM food. When it is processed into what would be regarded as food—bread, biscuits, pasta—then it can be clearly and easily labelled and identified to the retailer. All of those things cost money.

We may or may not agree with the KPMG study in terms of quantifying the costs. We simply referred to it because KPMG is an independent group that has had a look at it. We believe that, with experience, efficiencies would be developed in all of those systems and the costs would reduce over time. However, the system that needs to be maintained to separate those streams, particularly of bulk commodities such as grain and canola, is an expensive process.

The Hon. Dr B. P. V. PEZZUTTI: Who paid for the research done by KPMG?

Dr COOK: I have no idea.

The Hon. Dr B. P. V. PEZZUTTI: I recently attended a meeting at the University of New South Wales where it became clear that the Australian Conservation Foundation and its supporters believe and strongly hold the view publicly—I do not know whether it is their official view—that research done by industry is somehow tainted and unreliable and cannot be believed. If it is paid for by Monsanto, for example, it is worse than useless and it is misleading.

The Hon. J. R. JOHNSON: It is misleading or it is alleged?

The Hon. Dr B. P. V. PEZZUTTI: That is what they alleged. What I said should all be in inverted commas. It is important to understand who paid for that research in this area. I am sure that would be identified on the web site. It is a great difficulty in this whole area of research and the reading of research information. It seems that any studies done by private industry are not believed. To that extent, has research money been provided by New South Wales Agriculture, which is seen to be a non-dedicated stakeholder—although it probably is—by the Australian Conservation Foundation and its supporters? What research money has government provided for independent research?

Ms SCOTT-ORR: The only money that is being put in essentially is part of the salaries of people like myself and Regina and people who are trying to assess the policy issues on an independent and even-handed basis. But we are not funding that as a major project per se. The department is funding my trip to the United States later in the year to look at and pursue the issues

of organic, conventional and genetically-modified growing issues as they are perceived in the United States.

The Hon. Dr B. P. V. PEZZUTTI: Are you aware of concern in the community that if Monsanto gave a grant to the CSIRO to fund some scientist who decided to have a research project, somehow or other that is tainted? You are aware of that concern, are you not?

Ms SCOTT-ORR: I am aware of that perception, yes.

The Hon. Dr B. P. V. PEZZUTTI: Do you believe you can separate that sort of research at the CSIRO from other research at the CSIRO?

Ms SCOTT-ORR: We have a process of contesting for research funds that normally come through the industry research and development corporations, which are levy funds plus Commonwealth Government funds. If and when we do research that is directly funded by companies, that tends to be in the nature of contract research, which is commercial in confidence, and no public dollars go into that research. We make sure that we do that essentially on a consultancy basis, so that we make a small profit to defray the overheads of it.

The Hon. Dr B. P. V. PEZZUTTI: Is that less valuable or less trustworthy research?

Dr COOK: Can I ask you what sort of research you mean? I can understand where you are coming from in terms of the KPMG research, but in terms of physical plant breeding and all that sort of research, I cannot see the perceived problem.

The Hon. Dr B. P. V. PEZZUTTI: Let me assure you that there is.

Dr COOK: Can I clarify what sort of research you mean?

Ms SCOTT-ORR: Do you mean the physical plant breeding research?

The Hon. Dr B. P. V. PEZZUTTI: Yes.

Ms SCOTT-ORR: I would just say that we do very little contract research in that area. I think that would be a correct statement to make.

Dr COOK: It is important to make the point that New South Wales Agriculture has no transformation capability in plants. We do not transform any plants.

The Hon. I. COHEN: Are you aware of claims about ryegrass already having become Roundup-resistant in New South Wales and of the large-scale contamination of cotton seed in Greece? Are you concerned about viral resistance in these new genetically-modified crops?

Ms SCOTT-ORR: You have raised a number of issues. One is the issue of herbicide resistance, which has developed naturally in Australia to Roundup as a result of quite

heavy use of Roundup in many different systems. The introduction of Roundup-resistant crops, if not carefully managed, could have the potential to increase the development of resistance. For that reason, I think the policy position of New South Wales Agriculture is that, before its introduction, a herbicide-resistant crop should be accompanied by a crop management plan that is fully negotiated with the industry.

The Hon. I. COHEN: Is that not in itself a danger? The industry, and particularly GE, is attempting to claim that it is reducing the amount of pesticide usage, yet there is increasing specific pesticide usage in this case.

Ms SCOTT-ORR: The claim is that, because there will be more effective application, there actually will be fewer applications of the pesticides, that they will be better targeted.

The Hon. I. COHEN: Does your department have any concerns generationally about adaptation to that pesticide?

Ms SCOTT-ORR: Certainly. We have serious issues with herbicide resistance. Resistance to chemicals that are used as magic bullets does occur, whether it be with antibiotics, pesticides or herbicides. There is no doubt about that.

The Hon. I. COHEN: But are you doing any independent, department-based research into those issues? As the Hon. Dr. B. P. V. Pezzutti has said, there does not seem to be any of that.

Ms SCOTT-ORR: We are doing research into the general area of herbicide resistance and how to modify weed management systems to reduce or avoid the development of herbicide resistance. We have done that, similarly, with anthel-minties in sheep and insecticides in a wide range of crops. That research is publicly funded; it is either industry funded or publicly funded, but not by the chemical companies. As I said, the only issues in respect of which there is chemical company funding are in contract research situations, and I must emphasise that that is a very minor aspect of the research that New South Wales Agriculture carries out.

CHAIR: Where do you do that research?

Ms SCOTT-ORR: General contract research?

CHAIR: No. The research that you were just talking about.

Ms SCOTT-ORR: It would depend on the issue.

Dr COOK: Might I add to that?

CHAIR: Yes.

Dr COOK: In terms of herbicide resistance, we are a core partner of the Weeds Cooperative Research Centre. One of its major objectives is to develop management systems for weeds, rather than rely on pesticides, or herbicides in this particular case. We have a number of scientists dedicated and committed to the Weeds Cooperative Research Centre working in those general areas.

I make the further point that it is important to distinguish between pesticides in their general term when there are a range of those. There are herbicides that take out weeds, insecticides to address insects, fungicides for fungi, and so on. The issue of insertion of genes for resistance to the particular pests is, of course, directed at reducing that particular pesticide use. Herbicide resistance is a little different. Herbicide resistance in a crop plant is intended to try to achieve a much better weed control. With the BT cotton, for instance, it has resulted in a significant reduction in the use of insecticide on cotton as a result of that insertion. Similarly, if we could identify resistance genes to other insects and fungal pathogens and viral pathogens, they would be intended to reduce reliance on pesticides to manage those pests.

The Hon. I. COHEN: I would like to ask you more about BT cotton, but I am mindful of the limited time. I am very interested in what I understand are canola field trials in New South Wales, in that genetically-engineered canola is being produced on the basis of field trials. I understand that the excuse of commercial in confidence is made for not making those sites public. As you may well be aware, there is quite a bit of debate on this issue. On one hand, the company is pointing to a 400-metre buffer zone; on the other hand, there is evidence that pollen from canola can travel four or five kilometres.

Given that recently the New South Wales Grains Board took a contract—and there may be others, and I think there are—of some $26 million in sales of canola to Europe as genetically engineered for the United States, is it not a very dangerous precedent to be undertaking such experimentation that has the potential to dilute what I call out clean, green product and our ability to market successfully, particularly to Europe, which I think you identified, Ms Scott-Orr, regarding niche marketing, which is becoming very important?

Dr SPURWAY: You have rightly identified the potential for canola pollen to be disbursed by wind or insects over quite large distances. Unfortunately, there is not much data available in Australia; in fact, there are virtually no data at all. Most of the data on which we have been relying is produced in the United Kingdom, where environmental conditions for survival of pollen are much more favourable than they are in many of the canola-growing areas in Australia, where, in spring, when the crop is flowering there is much lower humidity and much higher temperatures than often occur in Europe.

With that reservation, I would agree with your statement that pollen can be transferred, and remain viable, over quite large distances. But might I quote from a couple of scientific studies published in the scientific press, comparing the amount of hybridisation in a standard canola crop with the amount of hybridisation from a genetically-engineered crop that is growing nearby. If the two crops are grown within two metres of each other, 400 of the plants in each thousand plants in the standard crop will have been cross-pollinated by the genetically-modified crop. That is at a separation distance of two metres.

If the distance is increased to 100 metres, 40 plants in each thousand will be cross-pollinated. If the distance is further increased to 200 metres, the number of plants cross-pollinated falls to 15. At 400 metres, four in a thousand plants will be cross-pollinated. So there is contamination, but the amount of contamination is at an extremely low rate, it would appear, when crops are separated by a distance of 400 metres.

The Hon. I. COHEN: Would that satisfy a European market that requests a guarantee of non-genetically-engineered produce from Australia? Bear in mind we are looking at something like a $20 million windfall for this market. Does that guarantee it?

Dr SPURWAY: I am sorry, but I do not know what the particular requirements are of purchasers in the European Community.

The Hon. I. COHEN: Well, it is to be GE-free. This is becoming a very strong condition in certain areas. Ms Scott-Orr mentioned Australia's ability to successfully compete against and beat competition in the United States of America. Otherwise, do we not just become a small-scale clone of United States production, which will then lose out every time because of economies of scale, and hence the need for a niche marketing? Is not GE-free in this particular case of great value to the Australian economy?

Dr SPURWAY: It can be of great value, yes. I would agree that 0.4 per cent contamination through cross-pollination means that it is not a GE-free crop.

The Hon. I. COHEN: Is your department mindful of that duty of care to maintain public health and safety paramount? Are you doing any independent investigation into such crops? Why does not the public know where these crops are being grown on an experimental basis at this time? Would that not be a reasonable request, particularly from neighbouring farmers who might have their eye on a European, Japanese or Korean market?

Ms SCOTT-ORR: We are not actually the people who are doing all the field trials.

The Hon. I. COHEN: But it is occurring in New South Wales, as it is in other States.

Ms SCOTT-ORR: Yes. But there is the legal issue of jurisdiction. I guess in the present regulatory framework it is still a voluntary process under GMAC, which is now becoming the office of the gene technology regulator. But, until this Commonwealth legislation comes through, there is no legal framework that encompasses any of those issues and provides us with powers.

The Hon. I. COHEN: Does not the Department of Agriculture have an interest in such a radical experiment?

Ms SCOTT-ORR: Potentially, a lot of people have an interest. But, once you start talking about making public a particular site, you must consider the legal powers necessary to do that. At the moment, there is no such legal framework.

Dr SPURWAY: In addition to that, we do not know exactly where most of these crops are.

The Hon. I. COHEN: In New South Wales?

Dr SPURWAY: In New South Wales. That information is not available to us.

Ms SCOTT-ORR: We are not a regulating agency in that respect at all. There is no State legislation that would give us that power.

CHAIR: Would it not be unfair to a neighbouring farmer, particularly an organic farmer, if one of these trials is going on nearby and he had not been advised of that? One would expect there would be some duty of care.

The Hon. Dr B. P. V. PEZZUTTI: You would then have genetically-modified organic crops!

CHAIR: Through no fault of his own.

The Hon. I. COHEN: It is of concern. I would have thought that the Department of Agriculture, being the major government instrumentality involved, would have oversight of this in the public interest.

CHAIR: So, what you are saying is that there is not at the moment any regulatory framework in respect of that?

Ms SCOTT-ORR: I am saying that we do have concern and we have tried to bring up those points in our submission. They are drawn out a little more detailed in the written submission that has been provided. We do have those concerns, I fully agree with you. Things like the size of buffer zones have to be kept under review.

The Hon. I. COHEN: We do not know where there are and we do not know whether there is any buffer zone.

Ms SCOTT-ORR: GMAC originally set the buffer zones at 400 m on the basis of the information available to it at the time.

The Hon. I. COHEN: Would GMAC know where the trials are?

Ms SCOTT-ORR: Certainly.

The Hon. I. COHEN: Who knows where the trials are?

Ms SCOTT-ORR: GMAC knows. It is the Commonwealth agency and it has set the 400 m buffer zone. People are conducting the trials under permission from GMAC. Although it is a voluntary system, I understand that it is fairly tightly adhered to—that is the impression one gets when one looks at the GMAC annual report. GMAC does not release the names and the sites because it is a privacy issue.

The Hon. J. R. JOHNSON: How does GMAC acquire the information?

Ms SCOTT-ORR: People who wish to conduct trials are required to provide that information.

Dr COOK: There is a system of institutional biosafety committees that are required by GMAC, which also authorises the institutional biosafety committee in each agency or company. Any organisation that wishes to work in this area must have such a committee, which is accountable to GMAC for what goes on in the institution.

The Hon. I. COHEN: In terms of financial loss, who is responsible? If something goes wrong and a neighbouring farmer—be he ordinary or organic—loses a market, who would be responsible? Would GMAC be financially responsible?

The Hon. B. P. V. PEZZUTTI: How would the purchaser ever know?

Ms SCOTT-ORR: That has not been tested.

Dr COOK: Indeed.

Ms SCOTT-ORR: Testing systems are being developed—we alluded to this in our submission—for the constructs of DNA; the transformed products. The companies that have patented those products have developed testing procedures to guard their patents. But, of course, that process can be turned around to require testing for proof of freedom. We do not know how those tests should be considered.

The Hon. I. COHEN: As Dr Pezzutti said, how would people know about a GM crop? Surely that makes it even more important for there to be geographic transparency in the form of a map? That is how we would know: we cannot tell by the product, but there is no discrepancy if there is clear geographical transparency. We would then know what types of products are being produced and where. Would that not be your department's responsibility?

Dr COOK: No, it is not our role; we have no regulatory authority in that area at all. That is the purpose of the new Commonwealth regulatory framework and gene technology legislation: to establish a very transparent, rigorous risk assessment process.

The Hon. I. COHEN: We will certainly ask the relevant officials about that. Would that included trial processes like those that I have described?

Dr COOK: That is my understanding.

Ms SCOTT-ORR: There may be public disclosure of trial sites.

Dr COOK: There is no question that applications for dealing with GMOs and the process by which OGTR deals with them will be made public. That is quite clear in the draft legislation.

The Hon. B. P. V. PEZZUTTI: How will we protect the growers and researchers from Luddites who would simply burn the crop?

Ms SCOTT-ORR: Exactly.

Dr COOK: Such people clearly exist, and that is an issue.

Ms SCOTT-ORR: I made the point earlier that the 400 m buffer zone for canola was set by GMAC. That zone would have been established before the information that Richard read from became available. Is that information still in press?

Dr SPURWAY: Some of the information is still in press, but the essence of it would have been available in scientific literature when GMAC introduced that requirement.

Ms SCOTT-ORR: In regard to your comments about Europe and preserving trade, I think it would be important to review those buffer zones as the trade requirements strengthen so that they are wide enough to ensure that there is no detrimental effect to an organic grower.

The Hon. I. COHEN: If we are looking at economic viability, we need to look also at guarantees to a market and perceived guarantees to a market, which is equally important.

How would your department differentiate between cotton seed that is grown for textile production and so on and cotton seed oil that is used in margarines and other products? Do you have a clear guide that ensures that there is no cross-over, particularly when we are considering all sorts of GM developments? Is there any guarantee that, when people see "cotton seed oil" on a product label, they will know that it has come from a crop that is totally separate from that used for textile production, which relies on higher levels of pesticide usage? Is there any mechanism to guarantee that?

Ms SCOTT-ORR: There is no mechanism at present for segregating GM ton seed oil from oil from conventional cotton.

The Hon. I. COHEN: So cotton seed oil could come from cotton crops on farms that use all sorts of pesticides and BT cotton could conceivably escape into some common foods such as margarine?

Ms SCOTT-ORR: I think you are mixing up several issues. Before products pass into the food chain they must achieve all required levels of freedom from pesticides. Pesticide levels must be below MRLs and so on. If we consider general pesticide levels for products coming into the food chain, we will find that non-compliance with MRLs is extremely low. The national residue survey publishes the results every year, and Australia has an extremely high compliance rate with absence of pesticides. That is one issue.

However, there is no doubt that the use of BT cotton reduces the amount of pesticide sprayed— approximately 44 per cent is the summary over three years. So the risk of off-site problems with pesticides—such as risks to the environment and risks from other non-specific residues— has been lowered by using BT cotton. However, there is no process for segregating the products of BT cotton.

The Hon. J. R. JOHNSON: You have no doubt read in recent days about the difficulties experienced in Tasmania with the importation of salmon and the likelihood of the Canadian Government's imposing 100 percent tariffs or duties on any product imported to Canada from Australia. If the World Trade Organisation receives an application from an overseas company that produces GM products and that wants to export those products to Australia, what will stop it imposing the same sort of detrimental regime as the Canadian Government proposes?

The Hon. B. P. V. PEZZUTTI: Can you walk us through what the Canadian Government is proposing?

Ms SCOTT-ORR: There has been a long-standing issue about the importation of relatively unprocessed fresh smoked salmon into Australia. Salmon populations in the Northern Hemisphere have certain viral diseases that we do not have in the Southern Hemisphere. Tasmania has a small but significant salmon industry and it is feared that the importation of salmon products that are not sufficiently processed will introduce disease. That quarantine problem has kept out Canadian salmon, in particular, and the matter has been before the World Trade Organisation. The Canadians have won the case and it has been held that the Australian quarantine issues are non-tariff trade barriers. It is threatened that Canada will impose 100 percent tariffs under WTO rules.

CHAIR: The market is worth $120 million now.

The Hon. B. P. V. PEZZUTTI: Is that a 100 per cent tariff on anything we send to Canada?

CHAIR: Yes, anything at all.

Ms SCOTT-ORR: Products such as beef or whatever.

The Hon. B. P. V. PEZZUTTI: That is a fine.

CHAIR: The ruling is designed to allow Canada to recoup any potential loss.

Ms SCOTT-ORR: I did not quite understand the question in terms of how that matter relates to companies or countries that may wish to send us GM products., I understand that GM products are being imported into Australia at present.

Dr COOK: Another issue that must be brought into the discussion is an international biosafety protocol that is still being negotiated. It is intended to address explicitly the movement of GM organisms between countries.

The Hon. J. R. JOHNSON: If Australia decides that it will not permit the importation of GM products, will overseas countries be able to say, "Wait a minute"?

Ms SCOTT-ORR: The short answer is yes, under the WTO rules.

The Hon. J. R. JOHNSON: So it does not matter what we do.

Dr COOK: I am not quite so sure. I think the international biosafety protocol will have a big bearing on what conditions each country can impose on the importation of genetically modified organisms. For example, genetically modified soya bean is a living organism and I believe it could come under the international biosafety protocol. That protocol has not yet been finalised and is being addressed in international forums.

The Hon. B. P. V. PEZZUTTI: If the Europeans decided that they would not take any of our canola oil because it came from genetically modified crops, we could apply exactly the same argument that the Canadian salmon market has used about imports to Australia—in fact, the argument would be better because you cannot tell the difference between the two.

Dr COOK: That is exactly right.

The Hon. B. P. V. PEZZUTTI: We could reach the stage where every country had hundreds of standard tariffs on every other country's products, which would mark a return to the old days of protectionist policy. That is the issue.

The Hon. J. R. JOHNSON: The indication is that GM products are coming into Australia. Are they food products?

Ms SCOTT-ORR: Yes, that is my understanding. According to the list published in the *Sydney Morning Herald* last year, GM soy is imported for use in food processing.

The Hon. J. R. JOHNSON: Is there any mandatory labelling of the products?

Ms SCOTT-ORR: No, not at present. That is the issue.

Dr COOK: Labelling is the responsibility of the Australia New Zealand Food Authority. New South Wales Agriculture certainly has no role in the labelling of GM foods.

Ms SCOTT-ORR: It is the responsibility of the Health Ministers.

The Hon. J. R. JOHNSON: Are there watching the briefs within the Department of Agriculture seeing what is happening in the United States, the EC and Canada?

Ms SCOTT-ORR: Yes.

The Hon. J. R. JOHNSON: The EC has made some decisions within the past couple of months. What were those decisions in relation to GM foods?

Ms SCOTT-ORR: I cannot quote those decisions directly. However, I know that the EC has determined that it will require the labelling of GM products. I will take that question on notice and pass the information to the Committee.

Dr COOK: There is a European Commission representative in Australia who operates out of Canberra. If the Committee wishes to contact him directly, I will provide his name. He is a very entertaining Welshman, but that is neither here nor there.

CHAIR: We would appreciate that.

Dr COOK: I do not know his exact title, but he represents the European Commission as distinct from any particular country.

CHAIR: We have not talked much about GM vegetables yet. I have an interest in Sydney Market at Homebush—I know the watermelons that I sent there yesterday were not genetically modified. Recently, Sydney Market issued a publication called No Genetically Modified Foods at Sydney Market . About $2 billion worth of fruit and vegetables go through those markets every year. How can they be sure of that?

Dr COOK: No variety of fresh fruit and vegetables released anywhere in Australia is a GMO.

CHAIR: But at those markets you will find Brazilian oranges

The Hon. I. COHEN: They are banned in Brazil.

CHAIR: -and a whole host of other vegetables, including bananas from Mexico, that are not New South Wales or even Australian grown. How can they be sure?

Ms SCOTT-ORR: I guess the only way they can say that is because of the penetration of the technology so far into fruit and vegetable production elsewhere, which would be very low.

Dr COOK: That is right. There is a very good understanding and knowledge of what GM varieties are being released in countries around the world and there are not any in those fruit and vegetable crops. The only one that I can immediately bring to mind is the flavour saver tomato that has been commercially released.

Ms SCOTT-ORR: Commercially released where in the United States of America?

Dr COOK: In the United States of America only in America. It was canned and sold in the United Kingdom as a canned product. These things are always patented. They are always registered in the national plant variety rights register or the patent register, so worldwide knowledge on what varieties are available is very clear.

The Hon. J. R. JOHNSON: The question of waste breakdown was mentioned. Are you using that in Australia?

Ms SCOTT-ORR: Not as yet. I think micro-organisms are being developed for the biodegradation of products. I do not have the exact details but some of them may be genetically modified. In terms of plants, I do not think there are any GM plants currently being worked on in Australia for waste breakdown.

Dr COOK: No, it was mentioned as a potential opportunity, but it is not close to reality.

Ms SCOTT-ORR: I think there is some work on that in America, which is where most of this technology has been developed.

The Hon. J. R. JOHNSON: Can a farmer who buys a product from Monsanto and pays a premium for a particular type of seed harvest that seed and use it again without paying a premium to the original supplier?

Dr COOK: It depends on how that variety is protected. Under the current Australian Plant Breeders Rights Act he can; it is what is called a farmer s privilege. Having bought the seed originally and legally through a licensed supplier, he can retain seed from that crop for his own use.

Ms SCOTT-ORR: But he cannot on-sell it.

Dr COOK: He cannot sell it, barter it or anything else. He can retain it for his own use only.

The Hon. J. R. JOHNSON: Without paying a premium.

Dr COOK: Without obtaining a licence from the owner of the variety, which would undoubtedly require another payment.

The Hon. J. R. JOHNSON: If he obtains a licence he can sell it but he pays a premium.

Dr COOK: It would depend on the commercial arrangement between the farmer and whoever held the licence for that variety. They would come to an arrangement that suited both

of them. If they did not come to an arrangement that suited both of them the farmer would not be able to deal in that variety.

CHAIR: There is some suggestion of having a terminator gene so that the seed would be useless. It would be a bit like having a hybrid vegetable seed for 20 odd years. A vegetable seed might be $1,000 a kilo, compared to something that is $50 a kilo. You can reuse the $50 a kilo seed but you have to buy another kilo of the hybrid seed.

Dr COOK: But there is no compulsion to use the hybrid. You are entitled to grow whatever variety you want. If you want to grow the hybrid and get the benefits that that offers, you pay that. But usually seed costs in the production of a crop, particularly a vegetable crop, are often a very minor proportion of total costs. Even in Canola crops seed costs are quite a minor proportion of the total cost of growing the crop.

The Hon. J. R. JOHNSON: If I pay a premium and gushes of wind take the seed product into my next-door neighbour's place, is he entitled to do with it what he likes?

Dr COOK: I am not quite sure what you mean.

Ms SCOTT-ORR: Those issues are being argued in the courts now in Canada and the United States of America. I think there are several cases in which apparent local spread has occurred and there are cross-claims by the company and the farmer for damages or benefits. I think that picture is still quite unclear.

CHAIR: You talked a little about buffer zones relating to growing crops. As yet, there is not much GM involvement in vegetables. Is anyone doing any research to look at those buffer zones? Is it the process that you wait until someone develops GM vegetables and then a little later down the track someone decides to do some research on buffer zones and whether they should be restricted, or do they go hand in hand?

Ms SCOTT-ORR: No. The issue is whether it is an open pollinating crop that can cross pollinate. I am not a plant breeder.

Dr COOK: Some of the trials that GMAC would require would be to assess the extent of cross-pollination, particularly in self-pollinating crops. When we start to test the major winter field crops like wheat and barley I am quite certain that OGTR will require some evidence to show the extent of out-crossing between the GM crop and the non-GM crop to indicate just what the risks are in that area. Wheat, is overwhelmingly self-pollinated.

Dr SPURWAY: GMAC has required that sort of evidence to be produced in the past because it is concerned about not only out-crossing of the crop to another non GM crop but also in some cases the transfer of those genes to the weed population or the natural plant population, the wild relatives.

CHAIR: We have talked a fair bit about cross pollination. What about consumers of food who feel that they are eating naturally grown tomatoes, for example? I know there might not

be any difference and it might not hurt them, but do governments have a responsibility to protect people so that they are actually eating what they expect to be eating?

Ms SCOTT-ORR: That is the nub of the argument about labelling. If you introduce labelling, if you have a requirement for labelling, the verification system behind that to demonstrate that it will require that segregation and potentially buffer zones that are considered to be adequate, adequate mechanisms for ensuring that those buffer zones are observed, et cetera, is quite a big process.

CHAIR: This morning we are concentrating on the protection side. Perhaps we should look at the other side for a moment. What avenues of genetically modified technology should be actively pursued to improve the international competitiveness of agriculture in New South Wales?

The Hon. I. COHEN: You can answer none . That is okay.

Dr COOK: I will not answer none

CHAIR: You can take the question on notice and add more later after you get the transcript.

Dr COOK: The risk to Australian agriculture is that GM technology will be widely used overseas and our growers will be disadvantaged in regard to competitiveness. That is the risk we face. That will depend on the outcome of the current international debate on GM food. On one side you could argue that the outcome of that debate will be effectively a moratorium on GM food for some time or the indefinite future. In that case it is a non-issue. On the other hand you could equally argue that the outcome will be the sort of approach that the Australian Government is taking of a transparent risk assessment driven process which satisfies the community's concerns over human health and safety, and the environment. In that case it becomes quite a different argument. At this stage we will leave it at that as we recognise both sides of the argument.

The Hon. Dr B. P. V. PEZZUTTI: I come back to the issue of blue carnations because there is concern that the incorporation of a genetic material can get across into other plants. You may not be overly concerned about what people eat but that carnation material can get into a product, a plant, that we do eat. What evidence is there for the wild transmission of inserted genetic material so we end up with a blue tomato for example?

Dr COOK: Zero risk of a blue tomato from a carnation because you cannot cross them. That is the whole point of genetic modification. The advantages that GM give plant breeders is to find, identify and insert genes into commercially valuable species, which they cannot do by conventional breeding. You cannot cross the genus barrier.

The Hon. Dr B. P. V. PEZZUTTI: My next question relates to the insertion of virus material. If I remember correctly, the University of New South Wales successfully inserted viral material into plants but not the transmission of that viral material from plant to plant. Is that correct?

Dr COOK: I do not know the particular work you are speaking about. One avenue that can be explored is the insertion of part of the gene for a viral coat, for example, which will give a plant protection against infection by that virus. However, I do not know if that is what you are referring to.

The Hon. Dr B. P. V. PEZZUTTI: At the moment there is the ability to produce immunisations by producing genetically modified food to produce-

Ms SCOTT-ORR: Vaccine bananas.

The Hon. Dr B. P. V. PEZZUTTI: Vaccine bananas are one example. Is there a risk of transferring that vaccine capability in the banana to another fruit and in doing so cause a new virus to be produced which is harmful?

Dr COOK: Clearly, that would be one issue that the OGTR would have to look at in its risk assessment. Is that feasible? What is the risk? What are the consequences of that risk? The whole point of risk assessment is to look at that particular case, look at the risks and whether they can they be managed. If they can be managed, manage them. If they cannot be managed, there is no release. The purpose of the Commonwealth legislation is to address those specific issues.

Ms SCOTT-ORR: All the transformations that I am aware of take a small part of an organism, a small snippet of the DNA that codes for a particular gene or a collection of genes for one characteristic. From that little excerpt of a viral gene or a bacterial gene you will not have the ability to reproduce the whole virus. In fact, you will not have that capability at all. The most you will have is the capability of that characteristic to be replicated in the subsequent plants.

The Hon. Dr B. P. V. PEZZUTTI: That was the theory but the virologist at the University of New South Wales said that no-one has done the work that proves the theory is right.

The Hon. I. COHEN: In terms of gene recombination, there is a scientific consensus that genetic engineering remains unpredictable and is imprecise technology. The potential for radical gene recombination of host organisms is poorly understood. If such recombination occurred it could not be retrieved and could do enormous damage to natural system processes. How can you guarantee that such recombination will not occur in otherwise natural or non engineered populations? I am not just talking about other food production areas; I am talking about natural ecosystems. I understand that recently ryegrass has become immune to Roundup, and we have those changes. Does your department have a public interest obligation to guarantee that that will not occur? In such an industry of unknown quantities is this a real danger?

Ms SCOTT-ORR: I am not sure. I think there are several things. First of all, genetic recombination is the way that changes in organisms occur. It occurs naturally in all ecosystems. It occurs in microbial population and in plants as a result of challenges. It is the whole basis of the evolutionary process.

The Hon. I. COHEN: Sure, but are you putting genetically modified products in the same category?

Ms SCOTT-ORR: No, but the question you asked was: does not the department have a responsibility to stop it? That is well beyond our powers. I know we have powers but they are very minor, I must say.

CHAIR: The Committee has some questions upon notice that I would ask the witnesses to respond to in due course. They are:

1. What are the approximate levels of staffing and funding presently being allocated by NSW Agriculture for research and development of genetically modified technology?

2. What role does NSW Agriculture see for itself and other NSW government agencies in administering genetically modified food technology under current national and international legislative and policy regimes?

3. Will genetically modified food technology have any impact on the gene pool for agricultural crop varieties? What action is NSW Agriculture implementing to negate any negative impacts?

4. What education and training programs does NSW Agriculture have installed for farmers and food producers concerning genetically modified food technology? What programs are proposed for the future?

5. Could you comment on how genetically modified food is being viewed by our Asia/Pacific trading partners?

The Hon. Dr B. P. V. PEZZUTTI: I move a motion that the submission made by the Department of Agriculture to the Committee on genetically modified foods dated March 2000 incorporated in the Committee's submissions be made public.

Motion carried.

(Short adjournment)

LEO JOHN HYDE, Research and Development Manager, DuPont Australia, of Berowra,

NAOMI LORRAINE STEVENS, Public and Government Affairs Manager, Aventis CropScience, of East Hawthorn,

CLAUDE ALEXANDRE GAUCHAT, Executive Director of Crop Production and Animal Health, Avcare, of Bellevue Hill,

COLIN JOHN SHARPE, Director, Scientific and Regulatory Affairs, Avcare, of Jerrabomberra,

WILLIAM MAXWELL BLOWES, Technical Director, Monsanto Australia, of Kambah, sworn and examined:

CHAIR: Did you receive a summons issued under my hand in accordance with the Parliamentary Evidence Act 1901 and are you each conversant with the terms of reference of this inquiry?

Mr HYDE: Yes.

Ms STEVENS: Yes.

Ms STEVENS: Yes.

Mr GAUCHAT: Yes.

Mr SHARPE: Yes.

Dr BLOWES: Yes

The Hon. J. R. JOHNSON: Naomi, is Aventis CropScience a subsidiary of any other company?

Ms STEVENS: No, it was formed recently from the merger of two chemical companies, Agrevo and Rhone Poulenc.

The Hon. J. R. JOHNSON: How many members does Avcare have?

Mr GAUCHAT: We have currently 47 members, of which 13 are involved in biotechnology.

The Hon. J. R. JOHNSON: Is there a list of your membership?

Mr GAUCHAT: We can make that available.

CHAIR: Both Claude and Colin were before the Committee representing Avcare when it was looking at the new Pesticides Bill. Avcare is the commercial body looking after chemical companies and we asked them about ***drum****MUSTER* at the time. Although it is not 100 per cent related to this inquiry, members might be interested in hearing from Claude how it is going because it was going poorly when it was last discussed.

Mr GAUCHAT: We have had some pleasing progress in the last 12 months, especially in the last four. At the moment we have had about 150 collections around the nation and about the same number of councils which have either done collections or have signed up to do collections in the future. The result of those collections is an extraction of around 300 tonnes of waste material in terms of empty drums, both plastic and metal. That is around 20 per cent of our commitment over a three-year period to reduce packaging waste. It is a pleasing result and we now have more resources behind the program to promote it to more councils. The lack of uptake by councils has been a major problem in the past. It is a pleasing result to date but we still have a long way ahead of us.

The Hon. J. R. JOHNSON: Have many councils fallen by the wayside or pulled out?

Mr GAUCHAT: None of them have pulled out but certain councils have hesitated to join up.

CHAIR: That was a problem we encountered with the pesticides hearing. Councils were a bit slow. Since that time we have received levies on our chemical bills towards Drum Muster and it appears to be now taking off.

The Hon. J. R. JOHNSON: Three hundred tonne is being collected. How much has gone out?

Mr GAUCHAT: We are looking at around 4,500 tonnes of packaging waste so we need to start to claim back a lot of that.

The Hon. J. R. JOHNSON: So you are getting one-third back?

Mr GAUCHAT: Yes.

The Hon. I. COHEN: Has the question been addressed of the farmer delivering the clean drums and/or delivering dirty drums back?

Mr GAUCHAT: Yes. Having proper inspection at the collection sites is the critical point in the whole chain. Some drums have been returned to farmers because they were dirty.

The Hon. I. COHEN: Has there been any discussion about the collection of dirty drums, the cleaning of which can then be regulated rather than them be hosed out into creeks?

Mr GAUCHAT: Yes. The whole point is to educate farmers not to return dirty drums. ***drum****MUSTER* only collects clean drums. Another program called ChemCollect has been funded by both the State and Federal governments which will collect all existing waste of unwanted (unused, deregistered) products and the dirty drums that contain remnants of some of those unwanted chemicals will be returned under that scheme.

CHAIR: Claude, perhaps you would like to make a brief statement.

Mr GAUCHAT: I would like to start by saying Avcare believes that Australian agriculture is at a technology highway intersection and hence our interest in the debate on biotechnology. Australia could choose between two roads. One is the long-term sustainable agriculture road and the other is the short-term, reactive agriculture road. Our members are convinced that GMOs for use in agriculture, properly researched and well regulated, will offer clear benefits to consumers. The current public debate revolves around the two following key issues. First, how can we reach consensus within the community on the role of biotechnology in agriculture and, second, how can we ensure that chemical, organic and biotechnology farmers can coexist side-by-side within the same community.

Avcare in its submission has highlighted the need for appropriate regulatory controls as well as the use of rigorous identity preservation systems to ensure production to agreed standards. This, together with open communication between all interested parties, should allow crops derived from biotechnology to be safely grown in Australia. That concludes my brief comments and I will now answer any questions you may have.

The Hon. I. COHEN: You may be aware that I mentioned to the Department of Agriculture canola field trials that have been carried out in New South Wales and throughout Australia. I understand that due to commercial in confidence where the field trials are occurring have not been made public. Given that the New South Wales Grain Board recently secured a $26 million sale of canola to the European Market on the grounds that it was genetically free, would someone like to comment on the need for transparency and the danger of losing substantial potential markets, niche markets?

Ms STEVENS: Firstly, Aventis is developing genetically modified canola for Australia. Previously you might have heard about us working with the LibertyLink varieties and InVigor hybrid canola is relevant to Aventis CropScience.

The Hon. J. R. JOHNSON: Is your company the only company that is doing that?

Ms STEVENS: No, a number of companies are working with herbicide tolerant and genetically modified canola in Australia. Monsanto is one of them. There are herbicide tolerant canolas that under the Australian definition are not considered genetically modified but they are still herbicide tolerant. They are products from American Cyanamid and also Novatis for triazene-tolerant canola and imi-tolerant canola. There are a range of products available that are moving into the canola markets. You spoke about the need for transparency, the way we work with field trials in Australia and the commercial in-confidence information. Certainly, as an

applicant we provide all of our information about exactly what goes on with our field trials and where they are conducted to the Government. They go into the GMAC system.

CHAIR: To the Federal Government?

Ms STEVENS: Yes, to the secretariat. We actually give them more detail than is currently required in the guidelines. I guess that is part of our stewardship undertaking and we consider that the information relating specifically to trial locations and farmer details who are involved in the trials are commercial-in-confidence. There are a number of reasons for that information. Certainly that has been challenged recently by a freedom of information request to GMAC for access to that information. The initial decision was upheld—that is, the system would stay as it currently is.

The information is considered in the framework of government and legal activities. When dealing specifically with farmer details of a private nature, that is considered under the Freedom of Information Act to be an exempt category. It is then an issue of whether the Government decides that there is enough reason to release that information so that it can be provided in certain circumstances. But, essentially, in all circumstances those details are considered to be information that should be protected in a certain way.

The other part to keeping that information confidential at the stage of field trials is that we are working very closely in developing the products. We are trying to conduct scientific trials and work within a management system that we have to be very responsible for. The GMAC guidelines ask us to follow certain requirements for responsibility and use in the environment. We have to manage those sites and we have to manage access and involvement in the actual area of the trial that is occurring out in the field. From that point alone, if we do not know who has access to it because it is a publicly available site, then we will not really be able to control that site as well as we can at the moment.

The Hon. I. COHEN: I understand that you have a buffer in these circumstances which recognises 400 metres. I discussed earlier that there is potential for canola pollen to travel up to 5 kilometres. You might care to debate that but, nevertheless, it could be that it travels farther. How do you envisage that farmers growing genetically engineered [GE] crops indemnify themselves against putting the neighbouring organic farmers or even just non-GE farmers out of business when the insurance industry is so reluctant to actually do that? How do you guarantee that the pollen does not travel? Who takes responsibility for it? As I said before, there was a $26 million windfall for canola farmers who were beating the Americans to a European market. That is just one example, but there are more. That happened because we have a guarantee presently of GE-free food.

Ms STEVENS: If you come back to the European market, I must state for the record that the European market is self-sufficient in canola. It can produce its own requirements and it is only under certain market conditions that it requests alternative sources to obtain canola.

The Hon. I. COHEN: Are you aware of the sale of local canola?

Ms STEVENS: Yes, I am aware of that, as our trade goes.

The Hon. I. COHEN: Are you also aware of Japan and Korea being very strong on non-GE products?

Ms STEVENS: They are very strong markets for genetically modified non-segregated sources of canola from Canada. Certainly, Japan, Korea and Mexico are the key canola markets for Australia and for Canada. The product going in there has not suffered at all from a segmentation into a GM and a non-GM market.

The Hon. I. COHEN: Why did Australia get this particular market windfall?

Ms STEVENS: I think there was a certain amount of misinformation about how much of a windfall it was. You need to understand the complexity of global trading markets in canola and where our key markets really are. Certainly the Europeans have decided not to trade with Europe but their key markets are not in Europe. Europe can produce its own supplies of canola and is developing genetically modified canola, and it will develop non-genetically modified canola in the same way. I think we have to be very careful about how we interpret such a windfall. It is perhaps not a long-term guaranteed market for us. In relation to the 400 metres distance that we work under, it is a scientifically justified distance. It is also internationally credible.

The Hon. I. COHEN: When you say "internationally credible", in coming to those figures, is there a clearly independent review process operating that is quite separate from the various companies you represent so that we are talking about a clear and independent result? Do you have that process in order?

Ms STEVENS: There has been an enormous amount of work done by essentially government research organisations and independent groups.

The Hon. I. COHEN: Funded by?

Ms STEVENS: Government funding.

The Hon. I. COHEN: We were told that in New South Wales, New South Wales Agriculture did not fund any such investigation.

Ms STEVENS: I am not aware of what has happened in New South Wales, but I am talking about a global research picture. This is an international standard and there is no reason why pollen will travel any differently in one country to another.

The Hon. I. COHEN: We were told earlier that pollen actually survives and travels better in English conditions that it does in Australian conditions, so there are differences. Do we have any independent assessment of that situation in New South Wales, given that we have a significant number of trial plots of genetically engineered canola in New South Wales?

Ms STEVENS: I am not aware of any specific studies in New South Wales itself, but I do not see any reason to conduct those studies, given the enormous amount of data that we have to confirm what the impact and what the movement of pollen is.

The Hon. I. COHEN: You do not see any reason to notify neighbours of these trials—neighbours who are producers of canola or other crops?

Ms STEVENS: At the moment, we work within our requirements in relation to the 400 metres boundary. Certainly if the neighbour is within that 400 metres boundary, then they will know about the requirements for our trials.

CHAIR: There is no development application lodged with the council, is there?

The Hon. Dr B. P. V. PEZZUTTI: There is no need to.

Ms STEVENS: No. It is a federal system of field trial applications so it works through GMAC. Certainly the councils are notified by GMAC and probably more recently we have been doing some direct consultations with councils so that they can understand and discuss the issues—probably the broader issues about GMO's development and impact in their local situations.

CHAIR: Where the trials are being held?

Ms STEVENS: Yes.

The Hon. I. COHEN: I would like to ask the representatives from Monsanto how they respond to the claims that in Sweden a study has linked Roundup to a non Hodgkinson's lymphoma, and that in California, Roundup was the third-most frequently reported cause of illness related to agricultural pesticide use between 1984 and 1990. Since the change to surfactants, have there been ill effects? Can you prove an independent assessment of the current generation of Roundup?

Dr BLOWES: Let me start with the Swedish study which is the first one that you mentioned. The study to which you refer was a study of the whole range of pesticides. What was basically observed was a non-significant trend of a number of herbicides. It was reported in the popular press as a causal effect. The study itself was refuted by a number of eminent scientists who consider that there is no link. I guess that 20 years of research on the product have demonstrated that Roundup is not linked to cancers or any sort of carcinogenic effects.

The Hon. I. COHEN: Who funded these inquiries? Were they Government funded or company funded?

Dr BLOWES: We fund some and governments do their own research around the world. All the research is looked at by regulatory agencies all around the world.

The Hon. Dr B. P. V. PEZZUTTI: The issue is, as enunciated by the Australian Conservation Foundation [ACF] at a meeting at the University of New South Wales recently, that the ACF has absolutely no intention of believing research that is funded by companies such as Monsanto which was mentioned. If you fund research, the scientists who do it are dirty scientists. If you do not fund the research and if it is funded by a government, then it is okay. How do overcome that difficulty?

Dr BLOWES: It is a tough one. It is a bit of a circular argument. If we do not fund it and a government does, then we are accused of having a free ride on the back of the taxpayer. If we fund it through whatever agency, it is not credible. I guess what we tend to do is the best we can, which is that we fund some, some is picked up and universities do some.

The Hon. Dr B. P. V. PEZZUTTI: If I can be a little bit provocative, how do you pick dirty scientists?

Dr BLOWES: They are your words, not mine.

The Hon. Dr B. P. V. PEZZUTTI: They are the words of ACF, basically.

Dr BLOWES: Then that they are ACF's words, not mine, and I do not think that is fair to the credibility of scientists, really. That brings into question the ethics and the credibility of scientists. Certainly a company such as Monsanto has a high profile at the moment. We obviously cannot or we would rather not be accused of such things. We basically try to pick the best scientists.

CHAIR: Is there some way of channelling the money through the Department of Agriculture to do the selection?

The Hon. Dr B. P. V. PEZZUTTI: They do that through the CSIRO. They fund research by CSIR0 scientists, but if it is done by CSIR0 scientists funded by Monsanto, ACF will not believe that.

CHAIR: I am suggesting that you get the Department of Agriculture to get somebody else to do the research.

The Hon. Dr B. P. V. PEZZUTTI: Is that not the issue that we are confronting with people such as those in the ACF?

Dr BLOWES: The ACF has a point of view and, generally speaking, they are not the whole of the Australian population. They have a point of view. They express it, and that is fine.

CHAIR: Do the other two chemical companies want to add to that, or make any further comment on what Monsanto has said?

Mr HYDE: I agree with what Mr Blowes has said right up front. It is difficult. It is the sword of Damacles.. I do not know how we do this. From our perspective, as we have been around for 200 years and have been responsible for some fairly respected studies done in our own Haskell laboratories which are based down near the University of Delaware in North America. Haskell has a global reputation for the quality of its work and the integrity of its scientists. Other companies actually come in to contract work with Haskell, so I think we have a pretty good track record on research that uses our own people and external people. It is credible and believed by the general scientific community.

The Hon. Dr B. P. V. PEZZUTTI: That was not the question, though. How do you overcome the difficulty posed when one organisation such as the ACF, which is a major activist and an umbrella organisation, will not believe or take on board any research funded by a chemical company? How do you overcome that difficulty?

Mr GAUCHAT: If I may, I will give just a very brief response to that. In conversations with those activists or groups, we have learned that their main concern is that they believe that scientists do not consider the public good's view. As an industry, we are learning to address that concern by selecting scientists who know the big picture. I think this is where inquiries such as these are very handy to describe all the public concerns that our new technology may have today and tomorrow, hence to direct the research to address some of those concerns provided that they be addressed in a scientific way.

I think that what the committee might hear in inquiries like these, read about scientists in the newspapers or hears about in private conversations with these groups does differ. I would like to make that point because I think we need to work towards a common solution for science and the credibility of science in today's society. We are aware that the value system has changed and that scientists these days have a different perception in the public's view than they had 15 years ago.

The Hon. I. COHEN: I am not sure who to ask about to the inevitability of the technology. In general, Credit Suisse has compared GM technology with nuclear power. After its survey to consumer reaction, it stated that the march of GM crops no longer appears inevitable. Deutsche Bank's study, "GMOs Are Dead", predicted in May 1999 that price premiums for GMO seeds could collapse in response. Deutsche Bank reported that Monsanto began offering free Roundup herbicide to farmers who use the company's Roundup Ready maize seed. With international credit institutions regarding GM technology to be dead, how can you justify the industry's claims that such technology is inevitable?

Dr BLOWES: I think probably the best measure of that is the uptake of the technology in the United States. Currently, up to 60 or 70 per cent of soya beans are GM soya beans. A large proportion of the cotton that is grown is GM cotton and about 25 per cent of the corn is GM corn.

CHAIR: The Avcare submission mentions that almost 300 million people in North America have been eating food products with approved G M crops since 1994. So it is quite a significant figure.

Ms STEVENS: It is great to hear your comments about the banks, and the way things are taken up. Free Roundup sounds pretty good. That is the marketing operation and we cannot stop that from occurring. When we start to talk about the role that technology plays in the big picture, we are talking about issues such as feeding the world, trading and being able to be self-sufficient and sustainable. Each country has a different picture as to how they are developing their agriculture and utilising technology. I have a piece of data that I can leave with you that was really put together by the FAO in 1996 which shows that, in order to provide enough calories for the growing population over the next 25 years, there have to be improvements in a whole range of agricultural and technological activities. So biotechnology has a critical role to play, but it is not exclusive. It is not a one-off activity and it needs to be supplemented by improvements in fertiliser use, water use, and basic crop protection and seed-breeding activities. It is not something that is stand alone, but it provides a significant contribution to the big picture. It will vary in different countries as to how that plays a role.

The Hon. I. COHEN: I do not wish to engage in debate but it often seems that, even though you need to feed the world, the people who are undernourished cannot afford the food. There is much in that area to debate. I refer to pesticide dependence and ask Mr Blowes whether 71 per cent of genetically engineered crops that were planted in 1998 were designed to be resistant to herbicides such as glyphosate? Is the reduced use of pesticides one of the benefits being promoted for GM technology? If that is true, why does Monsanto wish to raise the current limit of 0.01 milligrams per kilogram to 2 milligrams per kilogram for Roundup Ready soya bean crops. I understand—and you might be able to correct me—that it is actually higher than 2 milligrams per kilogram. Is that correct?

Dr BLOWES: Yes. The original MRL for Roundup in this country was set at the limits of detection. The reason for that is that Roundup is a non-selective herbicide. You cannot spray it on crops as you can some other herbicides. So we never had any crop use. There was no need to register the product at anything other than limits of detection. We do that commonly; it is a common procedure with any number of pesticides. Once we embarked on the Roundup Ready technology, which is using the product in the crop, it became obvious that the MRL in this country should be set at the international standard, which is some 20 parts per million, I believe. That is what we have done.

The Hon. I. COHEN: So you are actually increasing the use of herbicides in this case?

Dr BLOWES: No, we are not. We are actually reducing the amount of herbicides per acre. It was necessary because of the fact that the limit of detection was used at the initial registration back in 1974. That needed to be adjusted because of the new use of the product.

The Hon. I. COHEN: I am interested particularly in Roundup. It is your company's assessment that it is not residual, like many other herbicides. Professor Adrian Gibbs, a molecular geneticist says that the half-life of Roundup in water is two weeks and in soil 80 days. So do you still call that a biodegradable and non-residual product?

Dr BLOWES: I guess we look at the relative merits of pesticides. Roundup is one that is called non-residual. It does have a half-life, as does any product in soil or water. Professor Gibbs, who is a virologist, by the way, has picked two points. You could pick any number of points in any number of conditions. Roundup breaks down quicker in soils with high organic matter and in conditions that are moist and warm. In sandy soils and in cold and dry conditions it takes longer. The fact that we have used the product in this country on almost two-thirds of the cropping land in the last 10 or 15 years without problems of any residual nature I think speaks for itself.

CHAIR: Is the use accelerating? I think when it came out in 1974 it cost about $700 for a 20-litre drum.

Dr BLOWES: Yes there certainly has been a change in the use pattern of the product with the change of price.

The Hon. I. COHEN: Is it true that Monsanto charges Australian farmers growing Ingard cotton roughly twice the acreage fee that is charged in the United States?

Dr BLOWES: Not now. We initially did. It depends a bit on the exchange rates by the way. We have changed our price to what is now more in line with the United States. But, basically, pricing in different countries is independent. For instance, the cost of Roundup in the US is two and a half times the cost in Australia. So you cannot really draw too many conclusions.

The Hon. I. COHEN: How many of Monsanto's crops under commercial cultivation contain antibiotic resistant marker genes?

Dr BLOWES: Most of them do at this point in time.

The Hon. J. R. JOHNSON: In field trials what happens to the product? How is it used? If it is not used how is it disposed of?

Ms STEVENS: We have a number of activities. I will talk specifically about canola as that is the work we are doing in Australia. We have a global breeding program which is to develop varieties of canola, in particular for the Australian market as well as for overseas markets. The work we are doing in our field trials is to evaluate both varieties and also to determine the features, the characteristics of the genetic modification. Also, the conventional breeding program that we do has a lot of work with adaptation to environment. So a lot of data is collected in a conventional breeding program.

The other activity that we work with in the field is the development of the use of the herbicide on the product ; on the seed. Because these products are herbicide tolerant we need to develop efficacy data and residue data for Australian conditions so that we can provide some recommendations for the optional use of that chemical on the product once it is commercialised. In order to do field trials we have to have some seed from somewhere. Where we might start to adapt seed in Australia we will have the seed in hand. We might import the seed from our global breeding programs around the world. We also then will increase the seed for our own uses, and for

our global uses as part of our field-trial activities. So we have to have seed from somewhere to go into the next year's trials. So virtually every seed that we need to use is accounted for.

In some cases, in a very early stage development, we will have only a small handful of seed, which might take up one row of a two-metre row of a field trial in a plot. That seed will be carefully looked after. We want to ensure that we collect every single seed that comes off that trial for use. In other cases we will have a larger quantity available, but if we are going to reuse it, obviously we have to grow it under conditions that provide us with a clean and pure line of seed. So the hygiene aspects are probably no different from those employed in a commercial certified seed production. But we might apply, for our own uses, a much higher standard.

So what we do not use in Australia when we grow a trial, for the next year's trials we export to our users overseas in Europe and also in North America. The stubble that remains in the ground is ploughed in or cultivated or, in some areas where it is appropriate, it is burnt as part of normal agricultural practice so that it does not go anywhere. It is managed. If there is any residual at all that we need to get rid of, the best way to deal with it is to bury it below one metre of soil and then to follow up with a monitoring program of that area to ensure that the seed has not made its way to the top. Essentially, one metre of soil over an expended canola seed is very effective in controlling that material. That is essentially what happens to it.

The Hon. J. R. JOHNSON: You said that it may cover one or two rows. Do I take it that the trials are not conducted on private properties?

Ms STEVENS: We conduct trials on private properties and also on government research stations.

The Hon. J. R. JOHNSON: What is the acreage under trial? This is a question that I will ask each of the companies.

Ms STEVENS: We have 13 different permits active with GMAC, so I am not sure which one you want. Do you want a total of all of those activities?

The Hon. J. R. JOHNSON: Yes.

Ms STEVENS: I will probably have to take that question on notice to work it out. For the main product that we are developing for Australia, the largest one, we have a permit. I know definitely that last year 1,200 hectares in total were permitted for us to use.

The Hon. J. R. JOHNSON: For one product or for all of them?

Ms STEVENS: It covers that range of activities that I described—developing, breeding and increasing seed, but it is essentially trait-based. So the hybrid, herbicide-tolerant canola that we are developing is conducted under that. The reference from GMAC is PR63. So there is an area there of 1,200 hectares, which we say will be the maximum possible that we will use in one year to conduct all our activities. We have to work out what that figure will be 12 months in advance of actually doing the work. In actual fact we might come in using a lot less area.

What also happens is that for each activity we might round up the area of land that we think we are going to use to a unit area of one hectare. For an activity where we are only getting a handful of seed we are not using a full one hectare of area. So it is very difficult to come back down from permitted area to actual area. I can tell you that it is certainly no more than 1,200 hectares.

The Hon. J. R. JOHNSON: Are you a member of the group that Claude represents?

Ms STEVENS: Yes.

The Hon. J. R. JOHNSON: If trials give an adverse result are the necessary government bodies and neighbours informed?

Ms STEVENS: Certainly all the information to pick up any adverse results is recorded. We submit that to the government system for review. As we have much experience in working with canola we know that the genetic modification will not provide any adverse results because we have done all the initial tests to make sure we know how it will react in certain circumstances. So then it is really a matter of looking at what is different about growing it in Australia that might cause the canola plant to do something differently.

We certainly monitor that. Our Institutional Biosafety Committee [IBC] takes full responsibility in the current system for any adverse activities, whether it is a truck spill or something happening biologically. We must report that, firstly, to our IBC who then determines the best course of action and that, of course, is communicated to GMAC as a matter of priority. So, we have procedures for transport, storage and handling to cover ourselves should that occur. So, yes, it is certainly managed appropriately.

The Hon. J. R. JOHNSON: Bill, is any research you have funded subject to peer review, either in-house or otherwise, or both, and has any such research not been released?

Dr BLOWES: Certainly we have our own internal standards, and generally speaking the information that we generate, whether it be through a university or in our own laboratories, is published in a reputable journal, which is peer reviewed. For instance, for Roundup Ready soya bean, all the food safety, allergynistic type tests are published in the most critical journals. So, it is peer reviewed. The final part of your question was, is any not released? We do not release what we consider to be commercial in-confidence information if it is of a commercial nature, which is fairly general.

The Hon. J. R. JOHNSON: No, if it gives an adverse result?

Dr BLOWES: No, and the rules and regulations, both here and in the United States, are quite clear, that if there are adverse results we are duty bound to report those to the FDA or GMAC.

The Hon. J. R. JOHNSON: In normal circumstances you would not publish them?

Dr BLOWES: They are published. For instance, if we report an adverse effect to GMAC, they report it in their annual report.

The Hon. J. R. JOHNSON: Can the representatives other than Naomi tell me how much acreage I have under trial?

Dr BLOWES: Perhaps I can start there. Again it depends on what crop we are talking about.

The Hon. J. R. JOHNSON: Total.

Dr BLOWES: Let me split it up so it makes a little more sense. The Ingard cotton is commercially grown now. Whilst it is not a trial, there is commercial release of somewhere in the area of 80,000 hectares this year. Roundup Ready cotton is due to be released soon, and we are in the pre-commercial release stage, so we have rather larger demonstration type plots which are more marketing in nature than trials. We have satisfied all the requirements that GMAC had in terms of the trial work, so will we have tended to grow bigger trials which are, this year, in the order of 1,000 hectares. Canola is still in the trial stages, so it is somewhat less than that, probably 500 hectares or lower. As Naomi pointed out, we have asked for maybe up to 1,000 hectares.

Mr HYDE: I will have to take it on advisement, but just off the top of my head, if it is tens of acres I would be surprised.

The Hon. J. R. JOHNSON: Claude, does your organisation collate all these figures?

Mr GAUCHAT: AVCARE does not collate figures. That is really company property. It is part of their commercial plans, and we do not ask for that information.

The Hon. J. R. JOHNSON: Nor do they supply it?

Mr GAUCHAT: Because we do not ask for it they do not supply it, but we have access to information that is obviously published by GMAC or any other organisation involved in control work. So, if we need some information, for example, to present to an inquiry such as this, we would get together and make sure we get that information. Otherwise we do not ask for it and, hence, we do not get it.

The Hon. Dr B. P. V. PEZZUTTI: Roundup resistance, does that occur naturally?

Dr BLOWES: You mean in crops?

The Hon. Dr B. P. V. PEZZUTTI: No, in weeds.

Dr BLOWES: There have been two recorded instances in ryegrass in Australia, so the answer is yes.

The Hon. Dr B. P. V. PEZZUTTI: Where you able to identify what about that ryegrass was different from other ryegrass that made it resistant to Roundup?

Dr BLOWES: Probably that it was put under more pressure from more applications required than in other areas.

The Hon. Dr B. P. V. PEZZUTTI: So the natural selection process had been extensive?

Dr BLOWES: Yes.

The Hon. Dr B. P. V. PEZZUTTI: Where you able to identify in the ryegrass genetic material, a difference between the two ryegrasses, the one that was resistant and the one that was not?

Dr BLOWES: We have done a lot of work on that, and it is quite a complex result. We believe it is a multigene phenomenon and not a single gene resistance that you see in some other herbicide classes. Hence the time it has taken for this to occur. It is quite a rare event. We have spent a lot of money trying to work out exactly what the differences are but, as yet, that answer eludes us.

The Hon. Dr B. P. V. PEZZUTTI: Has there been a transfer of that resistant gene from Roundup resistant canola or cotton or whatever to the ryegrass?

Dr BLOWES: I think I could answer that. It is almost impossible for that to occur. The answer is no.

The Hon. Dr B. P. V. PEZZUTTI: You have identified the genetic material you put into your cotton?

Dr BLOWES: We would pick that up quite easily.

The Hon. Dr B. P. V. PEZZUTTI: And that genetic material was not found in the ryegrass?

Dr BLOWES: That is right.

The Hon. Dr B. P. V. PEZZUTTI: My background is as an anaesthetist. In medicine we have been using genetically modified living organisms for a long time to produce antibiotics. Why do you think in medicine we are able to "get away" with that and food producers are not? Can I ask the question generally?

Mr HYDE: I will try to answer a little bit of that question if I may, and I think Naomi and some of the others may add to it.

The Hon. Dr B. P. V. PEZZUTTI: The same company is doing it.

Mr HYDE: That is right. Dupont has done some surveys. The CSIRO has done some surveys in this country. We have done some globally and we just got the data back. I actually reviewed the data on Friday. There is an interesting hierarchy of how people will accept genetic manipulation, if you want to use the term. It starts off with using the indigenous genes, and there is an acceptance rate of around 70 per cent to 80 per cent. The minute you bring in an exogenous gene it suddenly plummets to 50 per cent. The minute you start bringing in really weird pigs into corn it plummets again. As soon as you ask about medicine, it turns around and goes back to 98 per cent. I think it is the phenomenon of what is in it for me. That is what we think it is. In other words, my health is important to me, I do not care where this thing came from, if it will save my life I will put it in my body. Whereas, with food you have a choice—do I need to eat it or not?

The Hon. Dr B. P. V. PEZZUTTI: That is an important consideration. There is a lot of fear of technology, but the production of antibiotics with genetically modified ecoli, which is basically not a nice bug, is widely used and accepted by the same companies that are now producing the genetically modified crops. The next question I have is really about Roundup again. It keeps coming up. When you use Roundup Ready cotton, or whatever you call it, and you let that paddock go fallow, and grasses and weeds come up, not cotton, and you spray again, have any studies been done on the effectiveness of the Roundup on the second or third applications, and have any other plants apart from the ryegrass examples that have been used show resistance to the standard application of the Roundup?

Dr BLOWES: If Roundup Ready cotton setsd and the progeny of that seed comes out of the ground—

The Hon. Dr B. P. V. PEZZUTTI: No, I am saying a weed or a grass. Sometimes cotton is going to come up, but I am not talking about the cotton. I am talking about anything else.

Dr BLOWES: We have no weeds other than ryegrass in Australia which have shown any tolerance or resistance to the product.

The Hon. Dr B. P. V. PEZZUTTI: Has that work being done, incidentally?

Dr BLOWES: What work are you referring to?

The Hon. Dr B. P. V. PEZZUTTI: I am talking about growing a crop, and the next year just spraying the paddock to see whether or not the paddock, apart from any cotton that may come up, dies.

Dr BLOWES: No, we have not done it specifically for that purpose.

The Hon. Dr B. P. V. PEZZUTTI: Well, that is the question I asked really, and you said there is no evidence that that is so. If you have not done the study, your answer is correct, but it fails.

Dr BLOWES: Why does it fail?

The Hon. Dr B. P. V. PEZZUTTI: Because I asked the question whether that research has been done, in other words, whether someone has actually done what I suggested: that you grow a crop of Roundup Ready cotton, the next year you spray the paddock with Roundup—

CHAIR: Why does it have to be Roundup Ready cotton?

The Hon. Dr B. P. V. PEZZUTTI: It could be Roundup Ready canola or something.

CHAIR: So, if someone sprays of the paddock one-year and then the next year they do it again—

The Hon. Dr B. P. V. PEZZUTTI: The difference is you have grown a Roundup Ready crop. If you grow a Roundup Ready crop and the next year you simply spray the paddock with Roundup or perhaps grow the crop again next year, is the Roundup just as effective or do some weeds become resistant apart from the Roundup? Has that research been done, is the question I asked.

CHAIR: In other words, something came from the Roundup Ready crop across to the weeds, is that what you are asking?

The Hon. Dr B. P. V. PEZZUTTI: Yes, that is right.

Dr BLOWES: That is all looked at from a regulatory perspective, because basically we ask what is the likelihood of gene movement, and a certain number of species, if you like, can move. Genetic material could move from cotton to related species, but from cotton to unrelated species does not occur. So, we have looked at what related species there are in Australia to cotton, for instance, and there are some. They tend to be geographically distinct. The progeny of any crossing, if it were to occur—and it has only ever been shown in a laboratory—is sterile, so the regulatory authorities have adjudicated that that is of minimal risk.

The Hon. Dr B. P. V. PEZZUTTI: But have you actually done what I have suggested in broad acreage terms, where you have not just a couple of things that you have a chance of a widely dispersed population of weeds coming up the second year round?

Ms STEVENS: That is happening in management practices that are going in in a commercial field when they are using Roundup. I am not a cotton expert, but any chemical products—it would be the same for canola—if you wanted to go in and grow the same crop again, you are essentially setting up what you are saying as an example. It is occurring in your natural management practices.

The Hon. Dr B. P. V. PEZZUTTI: I just want to ask the question, has it been done?

Ms STEVENS: Yes.

The Hon. Dr B. P. V. PEZZUTTI: And has it been published?

Ms STEVENS: I suspect so. I would have to check that.

The Hon. Dr B. P. V. PEZZUTTI: If you could find it, I would appreciate it. That is of the one piece of research—you can grow it in the laboratory, but a broad acreage can be quite different. You find one or two perchance resistant ryegrasses, you would have trouble.

Dr BLOWES: It is a very easy experiment but the point is there are not related species in the same geographical area. So, what you are saying is will the gene flow from cotton to an unrelated species, and the answer to that is no.

Ms STEVENS: But there are still examples of going in year after year and spraying the same patch of ground with chemicals.

The Hon. Dr B. P. V. PEZZUTTI: I am not worried about that. That is like the ryegrass example. I am more concerned about what would happen if you had a Roundup resistant crop and transferred that to a weed.

CHAIR: Mr Blowes, you say that it will not happen unless the crops are related?

Dr BLOWES: That is right.

Ms STEVENS: It depends what the point is. In resistance management and good agricultural practice, we take it as the worst case that the inevitable might happen and there will be a transfer. In that case you do not go in again with Roundup on that patch of land. The farmer needs to be advised to go in with an alternative chemical that we know will take out that weed. It is a management issue. So what, if it happens.

The Hon. Dr B. P. V. PEZZUTTI: So what, if it happens? Roundup has revolutionised and made much cheaper the production of many crops. It has probably saved huge amounts of soil in Australia from going down the gurgler because of conservation farming. The possibility of producing Roundup-resistant weeds is of tremendous importance to agriculture, particularly in Australia.

Dr BLOWES: Can I perhaps assist in allaying your fears? In the United States Roundup Ready soya beans have been commercially grown for three to four years. In the US they tend to have a soya bean-corn rotation that is grown year after year. The experiment you are talking about occurs in the US year after year. We have no instance of any resistance to Roundup at all in the United States.

The Hon. Dr B. P. V. PEZZUTTI: Would you provide that information in the paper form? My friends at the ACF keep trotting that out. If you could send that information to the Committee I would appreciate it.

CHAIR: You will receive a copy of *Hansard*. When you read through the transcript, you may have taken a question on notice or not fully explained a matter. If you wish to make additional comments, please do so. We are more than happy to receive additional information from you.

Mr GAUCHAT: We will take this one on notice and provide additional information.

The Hon. Dr B. P. V. PEZZUTTI: Last year SCIMAC in the United Kingdom produced information for the Committee. At the end it says that the system developed by SCIMAC in the UK seems to have application to the Australian grain industry. However, it made the point that SCIMAC had been approved in Britain. Yet I have seen recent reports that, after a few demonstrations and crops being torn up, New Labour has decided to walk away from its commitment. What is the position in Britain at the moment with SCIMAC?

Mr GAUCHAT: Could we take that one on notice?

Ms STEVENS: I could probably make a brief comment. As far as I am aware, SCIMAC is a representation of the technology providers, as well as grower industries and some associated downstream industries. They have worked together with the government to come up with the most suitable, sustainable, good agricultural practice to go along with these crops. In terms of applicability to Australia, from a purely agronomic perspective we need to have discussions and work out whether parts of the SCIMAC plan might be appropriate for Australia and what we need to do here. I think a SCIMAC representative is touring at the moment. It is not necessarily the answer for Australia.

In terms of what is happening in the UK, you might see some reports of political backing-off. Our companies, which are European-based, have not slowed down the development of the crops in these countries. We are progressing as rapidly as we can with the field developments and towards commercialisation, and we are working through some of the regulatory and public issues that are being raised during the current climate.

The Hon. Dr B. P. V. PEZZUTTI: How will you market those products in the European Economic Community [EEC]? Britain is part of the EEC. How will Britain market those products internally, as well as within the EEC, if we are to believe the EEC protocols about the sale and even the growing of GM products?

Ms STEVENS: Industry is working as hard as it can towards reviewing and advising on those protocols. In fact, companies have undertaken to implement the protocols ahead of them being approved by government. So they are committed to coming up with better solutions that address the current political issues. You must recognise that in probably all cases that the science is not under question. It is a political scenario and an acceptance issue that needs to be

tackled. The science is continuing in its same format, and the companies are trying to address those political issues. Obviously we have to make sure that we meet all of the either new or revised requirements before we can get to market. That is a timing issue.

The Hon. Dr B. P. V. PEZZUTTI: Even if you get all the science right and the politicians say, "Nyet", what do you do then?

Ms STEVENS: I think that is also a marketing issue. We may well get it all right, the politicians say it is good, but the consumers might not buy the product.

The Hon. Dr B. P. V. PEZZUTTI: That is the third step. Getting it on the shelf is the first challenge. How will you do that?

The Hon I. COHEN: On that point, are you concerned about the opinions of many experts? It is not merely a political matter for the UK Ministry for Agriculture, Fisheries and Food. The British Medical Association has come out strongly against GM food crops. It is not just political. How do you envisage that farmers growing GM crops can indemnify themselves against putting neighbouring organic farms out of business when it seems that the insurance industry is reluctant to do so? Are your companies prepared to put up the money as a guarantee?

Ms STEVENS: There needs to be a practical solution, with everyone working together. There needs to be full discussion with all stakeholders about these issues and specifically related to the crops that are coming into the ground in Australia. It is very easy to generalise about this topic; we need to be specific. If we are going to be talking about canola and gene flow into organic crops, the questions to be asked are: Where are the organic crops? What is their market value? What are the issues? How far away are they? What is the practical solution? We need to have that discussion in order to answer that question.

The Hon I. COHEN: You knew where your trial GM crops were.

Dr BLOWES: Could I answer that question, because this matter has come up a couple of times? We have talked to the organic growers and have tried to provide a solution. We feel that it is very risky for us and our co-operators right now to provide the actual locations of trials. The fact that we have just had a terrorist attack, if you like, on pineapples, which cost the government $100,000, would suggest that out concerns are real.

We asked the organic growers, if they are concerned about the proximity of our trials, "Why not tell us where your organic growers are?" The answer to that is, "No, we could not do that, sorry." We said, "How about we get an independent auditor—KPMG or whoever you like. We will give them our information through GMAC, your people can ask them if their farms are in proximity to any of the trials and we will work it out that way." Our offer in that regard has not been responded to. I suggest that maybe there is a bigger agenda here.

CHAIR: You may have heard this morning some previous witnesses say that not many fruit and vegetables with the genetically modified organisms are in Australia yet. The only ones they were aware of were tomatoes. They went on to talk about a type of banana, and you

have just mentioned pineapples. What genetically modified fruit and vegetables are you aware of in the world at the moment, and are you aware of any genetically modified fruit and vegetables on sale in Australia?

Dr BLOWES: The answer to the second part of the question is no, there is none. That would be well known through the GM AC system. To my knowledge, there are trials with pineapples, tomatoes and papaya for virus resistance, which will have great benefit to developing countries. I think there are trials with lettuces, for whatever reason. That is the extent of my knowledge.

Mr SHARPE: There are potatoes, and mangoes might be another one. From a list on the GMAC web site you can pick up all of the applications that have been made for trials in Australia.

CHAIR: What would be the advantage to the farmers of growing, say, those potatoes or lettuce? Would it be similar to Ingard cotton—to get rid of heliothis?

Dr BLOWES: Yes. In the United States Monsanto has developed a genetically modified potato that is resistant to the Colorado potato beetle. That particular pest is devastating in potato-growing areas and the commercialisation of that technology has reduced pesticide use enormously. In the case of pineapples, I believe the research is to overcome the problem called black heart of pineapples. We have all seen the black stuff in the middle of the pineapple, which to consumers is not terribly appealing. The University of Queensland, I believe, has embarked on that research. As I indicated, developing countries have a big problem with viruses in papaya, which reduces production dramatically. Monsanto has basically donated the biotechnology to a country in Africa, which I cannot recall, to develop that technology.

CHAIR: There could be significant production advantages?

Dr BLOWES: There could be.

CHAIR: On the issue of gene labels, an article in the *Land* of 9 March suggests that gene labels could reduce costs by some 15 percent. Does anyone have any comments on that?

Mr GAUCHAT: As you know, that is in the hands now of the health Ministers. I believe that they will meet on or about 11 May to make a decision on labelling. That particular information, which was published recently, I think was based on previous estimates of the total cost to consumers of full labelling to consumers being $3 billion in the first year, and $1.5 billion thereafter. I think the government has now commissioned another report by a consortium of consultancies who will verify that figure or otherwise. That report should be made public at the beginning of April.

CHAIR: The article is a touch misleading because it says, "gene labels to lift costs 15 per cent". It is the actual labelling cost that would increase by 15 per cent, not the total retail cost of vegetables.

Mr GAUCHAT: That is right. It does not relate back to the actual production costs.

CHAIR: Or the retail price of vegetables because there could be a reduction in productivity costs. The actual retail price of vegetables may or may not change.

Mr GAUCHAT: We do not take that information as the best possible information because a consortium of consultants is looking it at again. The Ministers will take that report into consideration when they make a decision on 11 May.

CHAIR: What educational and training programs does Avcare or its members have in place for farmers and food processors concerning GM technology?

Mr GAUCHAT: I am glad you raised that question. We have been talking about biotechnology and how it helps the farmers improve their yields. Then we had a brief discussion on pineapples, which is really a food quality issue. In future, biotechnology will benefit the consumers by providing functional foods. So there are really three phases in this whole argument. Avcare and some like-minded partners, including the NFF, GRDC, the seed industry, CRCs and others, have realised that they need to put some factual information into the marketplace. That is under the auspices of the Agrifoods Awareness Australia [AAA]. The intent is to put factual information into the marketplace. We talk about the risks and the benefits of biotechnology as it relates to agriculture. We have successfully put this information into the marketplace and will continue to put out fact sheets and talk to people. It is not a question of promoting technology per se for agriculture; it is a question of explaining the technology and being open about its benefits and perceived risks, and how we might address those risks.

CHAIR: How do you intend to distribute those? A number of rural produce merchants are part of your group. Do you intend to distribute that among those merchants?

Mr GAUCHAT: We have distributed this to our own members, and each of the partners of AAA has done the same. We have also made it available to anyone in the media who would like to access it. I think that is a very important audience. We have appointed a full-time executive manager. That person will go out and speak to a lot of audiences and again make the information kit available. In the kit we talk a lot about trial sites. The intent is also to put up some demonstration sites so that people can see how biotechnology works at the rural level and how it compares to traditional agriculture. Again, we would like to make these kinds of information kits available to farmers or to local people in the community.

CHAIR: Will you put it on the Internet?

Mr GAUCHAT: It is already on the Internet.

CHAIR: Are you able to table that officially?

Mr GAUCHAT: I will officially table the document AAA. I would also like to table this one-page document to which my colleague Ms Stevens referred, that is, the importance of biotechnology in future to try to increase food production worldwide.

The Hon. Dr B. P. V. PEZZUTTI: I show you a glossy printout put out by the ACF. From my reading of it, I am not to impressed with it. What is the industry's response to that document?

Mr GAUCHAT: We have certainly addressed a lot of those issues in the AAA information kit.

CHAIR: Could Avcare identify areas of agricultural or food processing in which genetically-modified food technology may be of assistance to generate niche market opportunities or build on existing competitive advantages, particularly for New South Wales? Another inquiry that this Committee has is future competitiveness of agriculture in New South Wales. You might take that question on notice.

Mr SHARPE: We will take that question on notice.

CHAIR: Are you aware of any genetic modification programs being undertaken in Australia or overseas to develop crops with reduced water intake, drought resistance or with a specific tolerance to salinity?

Ms STEVENS: Yes.

CHAIR: Could you briefly talk to us about that?

Ms STEVENS: Only to say that there are crops in development programs around the world, and that certainly is a key area for agronomic problems that we are addressing through biotechnology. So, yes, those matters are being addressed in regard to various crops in various countries.

CHAIR: Are you able to get supplementary information on those issues for the benefit of the Committee?

Ms STEVENS: I will put that together for you.

CHAIR: What is your response to the view that genetically-modified food technology reduces the global diversity of agricultural crop varieties and limits the range of seed supply sources?

Ms STEVENS: That is incorrect. The converse is true. Accessibility to, and focus on, genetic engineering to supplement breeding programs is expanding the number and variety of seed available to growers. Specific examples were cited recently at a meeting of ASEAN in Jakarta, were Pioneer-Du Pont works with corn. The varieties that would grow in that area and were available to farmers in ASEAN markets initially was very limited. The number of varieties was

about 10. Since Du Pont has brought in some hybrid varieties, and since we have contributed further with genetically-modified varieties, particularly in the hybrid systems, the number of hybrid corn varieties that are in now available to be grown in the same area is about 50 or 60.. So those varieties have adaptability and features that are very specific to certain growing areas.

The other contribution to biodiversity from biotechnology is in being able to grow far more productive crops from a given piece of agricultural land, thereby relieving stress on having to plough in more natural vegetation areas for the purpose of converting them to cropping areas. So we are actually using what we already have under cultivation far better, and not putting continual stress on opening up more land for cropping. Sustainable production, and getting more from less, are key to sustaining the biodiversity that is inherent in natural vegetation. The positive contribution of biotechnology to biodiversity is an issue that is misinterpreted throughout the world.

CHAIR: We are running short of time. This inquiry will go on for some time. After hearing from a number of other witnesses, we will probably want to see you again sometime in the future. You might continue to keep the Committee informed.

The Hon. Dr B. P. V. PEZZUTTI: If we have some questions that are thrown up by the evidence of other witnesses from time to time, might we refer those questions to you for response?

Mr GAUCHAT: You certainly can. I think that is a good way to keep up the dialogue.

CHAIR: We might do that through you, Claude.

Mr GAUCHAT: Yes.

CHAIR: You might then farm out those questions. That might give you some advance warning about the sorts of questions we might ask when you again come before the Committee. There are a number of questions that I am will put on notice. The first is:

> Do you anticipate that farmers in New South Wales will face higher prices for genetically-modified seed than conventional seed? Will this translate into reduced profit margins for farmers and higher prices for consumers?

There has been some suggestion of moving away from Ingard cotton because the costs are too high. I do not know whether that is true or not. The other questions on notice are:

> Can Avcare identify any impediments to the expansion and diversification of genetically-modified crop and animal products over the next three to five years in Australia?
>
> What role can the New South Wales Government play in planning, co-ordinating or legislating regarding genetically modified food technology in New South Wales to achieve greatest benefits and minimal health and environmental risks?

(The witnesses withdrew)

(The Committee adjourned at 12.30 p.m.)