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HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON PRIMARY INDUSTRIES AND REGIONAL SERVICES

Reference: Primary producer access to gene technology

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HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON PRIMARY INDUSTRIES AND REGIONAL SERVICES

Monday, 20 September 1999

Members: Fran Bailey *(Chair)*, Mr Adams, Mr Andren, Mr Horne, Mr Katter, Mrs De-Anne Kelly, Mr Ian Macfarlane, Mr Leo McLeay, Mr Nairn, Mr Secker, Mr Sidebottom and Mr Cameron Thompson

Supplementary members: Mr Griffin, Dr Washer

Members in attendance: Mr Adams, Mr Andren, Fran Bailey, Mr Lawler, Mr Nairn, Mr Secker, Dr Washer

Terms of reference for the inquiry:

To inquire into and report on the following areas, with particular emphasis on the capacity of small and medium sized enterprises to access the benefits of gene technology:

. the future value and importance of genetically modified varieties;

. the ability for producers to compete using traditionally available varieties;

. the commercialisation and marketing of agricultural and livestock production varieties;

. the cost to producers of new varieties;

. other impediments to the utilisation of new varieties by small producers;

. assistance to small producers to develop new varieties and the protection of the rights of independent breeders, in relation to genetically modified organisms;

. the appropriateness of current variety protection rights, administrative arrangements and legislation, in relation to genetically modified organisms; and

. opportunities to educate the community of the benefits of gene technology.

WITNESSES

Committee met at 9.33 a.m.

CHAIR—I declare open this public hearing of the inquiry of the House of Representatives Standing Committee on Primary Industries and Regional Services into primary producer access to gene technology. Today's hearing is the fourth for this inquiry.

I advise witnesses that the committee's public hearings are recognised as proceedings of the parliament and warrant the same respect that proceedings in the House of Representatives demand. Witnesses are protected by parliamentary privilege in respect of the evidence they give before the committee. Witnesses will not be asked to take an oath or make an affirmation. However, they are reminded that false evidence given to a parliamentary committee may be regarded as a contempt of the parliament. The committee prefers that all evidence be given in public. But should any witness appearing before us at any stage wish to give evidence in private, they may ask to do so and the committee will give consideration to that request. I call the representatives of Agriculture, Fisheries and Forestry Australia.

GREVILLE, Ms Virginia, Assistant Secretary, Biotechnology and Research and Development Policy Branch, Agriculture, Fisheries and Forestry Australia

HEARN, Dr Simon, First Assistant Secretary, Portfolio Policy and International Division, Agriculture, Fisheries and Forestry Australia

MADDEN, Mr John, Director, Science, Technology and Innovation, Policy Section, Agriculture, Fisheries and Forestry Australia

TRUSHELL, Mr Paul Anthony, Policy Officer, Multilateral Team, Plant Quarantine Policy Branch, Policy and International Division, Australian Quarantine and Inspection Service

WATERHOUSE, Mr Doug, Chairman, Plant Breeders Rights Advisory Committee, Agriculture, Fisheries and Forestry Australia

CHAIR—Welcome. We have received a submission from Agriculture, Fisheries and Forestry Australia but have not, at this stage, authorised its publication. Therefore, I call on Mr Adams to move that the submission from Agriculture, Fisheries and Forestry Australia be accepted as evidence and be authorised for publication.

Resolved (on motion by **Mr Adams**):

That the submission from Agriculture, Fisheries and Forestry Australia be accepted as evidence and be authorised for publication.

CHAIR—Before we begin asking questions, would you like to make a brief opening statement?

Dr Hearn—Thank you. I will make it very brief because I know you have received evidence from other witnesses previously. Our submission is wide ranging because the subject of your inquiry is very wide ranging, and I believe that Agriculture, Fisheries and Forestry is intricately involved in many parts of it. I would not like to take up the committee's time by just repeating what may well have been said by previous witnesses on factual matters, although of course we would be very happy to take any questions you may wish to ask on those. I will limit myself in my introduction to very quick references to some of the key areas.

There is no question in our mind that, as gene technology and the broader area of biotechnology moves forward, Agriculture, Fisheries and Forestry stand to be major participants in that technology; indeed, the future competitiveness of that sector could be affected by our participation. There are tremendous opportunities but also, to be balanced about it, we do recognise that there are also some risks. That is often the way with research. We, as a portfolio, will obviously be addressing this technology in that light. As a portfolio, we are participating in what is really an example of a whole of government approach. There are at least five portfolios, if not more, in government that are closely involved, and I am sure that others have appeared or will appear before you.

We are participating in four key areas. Firstly, we are involved in developing an agrifood biotechnology strategy as part of a broader biotechnology strategy of the government. Secondly, we are involved in aspects of intellectual property as it may pertain to Agriculture, Fisheries and Forestry. Again, that is not exclusive to this sector, but this sector has a very distinctive interest in it. Thirdly, we are involved in access aspects and international aspects of gene technology and gene trading. This is an area that is still very open. I believe that we will hear a lot more about this in the future not only in the international trading environment but also in the international access environment. Even as we sit here, this matter is being debated in the FAO in Rome. Finally, there is the issue of information, and I am sure that in other sessions there has been discussion about public information and the role of government in public information alongside the role of the private sector.

Let me stress that, in all these endeavours that we are involved in, we are working closely and intend to continue to work closely with the industry sectors—that is both agriculture and food. I wish to stress the food side of it because, while it is obviously important to producers, the food industry is also particularly interested in gene technology and its future ramifications for that industry. I think that sometimes people tend to underplay that point in terms of considering the on-farm effects as well.

In conclusion, I mention that there are two or three institutions within this portfolio which do work, again within the whole of government approach, under the umbrella of the interim Office of the Gene Technology Regulator. They are the Australian Quarantine and Inspection Service, the National Registration Authority and the Plant Breeders Rights Office. Those three institutions within this portfolio will continue to be involved in the regulatory aspects in various ways. Rather than go through any further part of the submission, I will just leave my comments at that.

CHAIR—Thank you very much. I am sure that we all have a lot of questions. On page 10 of your submission, you state:

AFFA is working closely with the interim Office of the Gene Technology Regulator . . . and with State and Territory agriculture and resource management departments, to develop the required legislative framework.

Obviously, as you have said, there are opportunities and risks, and there are five different government departments involved. What exactly is AFFA's role in developing this legislation?

Ms Greville—Madam Chair, as you would know, development is occurring of both the interim arrangements and the longer term ultimate legislative framework that hopefully will be in place early in the year 2001. Our role in that process is both as a policy department with constituent responsibilities in relation to the workings of both the agriculture and the food industry and as the portfolio which has responsibility for two of the regulators who will be an integral part of that, the ultimate sort of umbrella uniform national regulatory system—namely, AQIS and the NRA. So our role is both to provide policy input into how the national uniform regulatory system will work effectively to make sure that it both minimises the risks and maximises the potential benefits of this technology to the agriculture and food industries and also to make sure that the existing regulatory responsibilities of the National Registration Authority and of the Australian Quarantine and Inspection Service are integrated

into that system in a way that maximises its effectiveness and utility as a protector against pests and diseases and environmental risks and all of those other things.

CHAIR—Just picking up on that last point, how many people does AQIS have who have the appropriate qualifications and experience to deal with the issues of—as I think you say in the submission—developing new procedures that require notification? I am interested in the degree of qualification had by AQIS members which will enable them to deal with what is at the cutting edge of new technologies.

Mr Trushell—We have a number of people working on gene technology or, from our end, the regulatory aspects of biosafety. We have molecular biologists at the PhD level who are doing the assessments of the import applications. We have molecular biologists also working in operational areas to ensure that the operations are effective in meeting the policy that is set through the risk assessment/risk analysis processes. We have people working in food policy who also are molecular biologists. That tends to be the scientific discipline that is working across AQIS. We have a number of people working in the food, animal, plant and operations areas.

CHAIR—Have these people been with AQIS for a long time, or are you recruiting new staff to deal with these issues?

Mr Trushell—I would say that, on balance, it is probably 50 per cent and 50 per cent. A number of people who have been in AQIS for a long time have excellent scientific and technical backgrounds; they have also picked up gene technology aspects of their fields through further education. We have recruited some specialist people over the last couple of years, particularly on the plant side. We have recruited a molecular biologist to look at assessments, as we are trading in plant products. We are not trading in as many animal products so far.

I have more a policy and regulatory legal background. That is where I come from. I work a lot more on the international aspects of our regulatory arrangements and make sure that they also meld with domestic regulations. So across AQIS there are a number of disciplines and also a number of people. As trade increases and we are asked to look at assessments in different areas, we then will look at whether the resources are applicable. But I feel confident that across AQIS we have the ability to effectively regulate and do the risk analysis for GMOs that are coming into the country.

CHAIR—It is mentioned in the submission that AQIS has assessed more than 30 applications. How many have been approved?

Mr Trushell—As I think is pointed out in the submission, we only allow genetically modified soya beans in from the United States. That is the only commercial trade that we are undertaking at this stage—and that is for processing imports. It is not allowed out of metropolitan areas. They are the risk management conditions that were set.

Of the others, most are seeds for experimental purposes for contained research or small scale field research. Out of those 30-odd, there were no quarantine concerns. Most of the modifications that were made to the conventional products involved issues such as proteins

and other quality issues that were referred to GMAC and recently the interim Office of the Gene Technology Regulator. So, as far as pest and disease concerns go, we were happy to allow those. When you look at contained research particularly, the risks are not as high. AQIS sets very strict conditions for contained research on GMOs, as we do for any living organism that comes into the country that has the potential to impact on animal, plant or human health and the environment.

CHAIR—Can you tell me the difference in criteria for risk assessment between a traditionally grown plant and one which has been genetically modified?

Mr Trushell—It is really the same criteria. We have built on our existing risk analysis procedures that were developed after the Nairn review of quarantine. They are consistent with our international agreements and international standards which were set under the relevant bodies for animal, plant and food.

The criteria are as follows. We put all living organisms that come into the country through a weed risk assessment initially. That enables us to see whether any of these living organisms—on the plant side, this is—have the potential to become weeds. We also work very closely with Environment Australia and GMAC on that assessment. The second stage is pest and disease risk assessment. Then the third stage is the genetic modification to see if there are any additional pest and disease concerns that have come out of the genetic modification in addition to the weed and other pest and disease concerns.

CHAIR—At the bottom of page 25 of the submission, talking about segregation, you state:

. . . AQIS has been involved in assuring the status of products for some specific markets already.

This is dealing with the question of co-mingling of products. Just briefly, what is AQIS's role in this?

Mr Trushell—AQIS undertakes export certification; that is one of our major roles. We work under the Export Control Act. That is a piece of trade legislation that was put in place in the early 1980s to ensure that our rogue traders were not undermining market access and market maintenance, as such. That is an imposition we placed on our own industries for certain prescribed goods.

Under our WTO agreements and United Nations Food and Agriculture Organisation agreements, importing parties have the sovereign right to determine what the importing measures are for any living organism, whether genetically modified or not. That is our sovereign right in Australia, and it is also the sovereign right of other countries, as long as that can be technically and scientifically justified. That is where AQIS's role in export certification comes in—meeting other countries' pest and disease concerns, certifying that our exports meet the import measures of other countries so that we are not exporting dangerous pests and diseases to other countries.

CHAIR—You have listed two important criteria there: meeting the requirements of overseas countries and our exports. What about the risk to other crops in Australia? You have not mentioned the third aspect, which I would have thought you would have mentioned.

Mr Trushell—Sorry, I am not sure that I understand the question.

CHAIR—With a crop being imported, of there being a risk to other traditional crops in Australia.

Mr Trushell—In terms of the import regulation? I am sorry, I do not understand how that affects export certification.

CHAIR—I am not talking about export certification, but I am talking about your role in risk analysis of a crop coming into the country.

Mr Trushell—Yes, we undertake all the pest and disease analysis with anything that is coming in. That is why we still have fairly high hurdles to overcome if any sort of grain or fruit and vegetable is to be imported for commercialisation in Australia.

Mr ADAMS—Perhaps we can deal with the issue of canola seed that has been imported. It has been modified, it has been sown and it has been imported. Evidence has been given that this pollen can travel for eight kilometres in the air; therefore, somebody who has a certified organic farm three miles away will be in trouble in making sure that their certification is up. What have you done about that? You have let the seeds in, they have been sown and I understand that they will be shipped out again. But someone else's commercial operation has been put at risk.

Mr Trushell—Sorry, I understand where you are coming from now. In terms of export certification that we have undertaken so far, we have been approached by a number of countries to ensure that our shipments are free of GMOs. As there had been no commercial releases of GMOs in Australia, we were confident that shipments did not contain GMOs. As things such as canola are commercialised further, as you are discussing—and we are commercialising crops in Australia—AQIS will not be as comfortable doing that. That is why we are talking to industry a lot about segregation and identity preservation.

The buffer zones and risk management that you are talking about between crops are not AQIS concerns. They are things that the Office of the Gene Technology Regulator or GMAC address. We address the pest and disease quarantine risks of seed coming into Australia, including pollen transfer from crops to native species. In terms of setting risk management for pollen transfer between crops, that is a risk management issue for GMAC and OGTR to address. That is why down the track we will be looking much more at industries being able to bring documentation to the border to ensure there being identity preservation or segregation of a crop.

Here, we are getting into a quality issue for other export markets which, again, may go out of the scope of quarantine's role. This is something we are developing policy for at the moment, so at the moment we are in the grey area.

Mr ADAMS—But we are a little bit behind, aren't we?

Mr Trushell—I do not know whether we are behind. I think our grain industries, for example, are way ahead of the rest of the world in terms of identity preservation that we are doing with traditional crops—for example, with protein levels for certain pasta markets and certain other products in other markets. So I think, in terms of identity preservation for non-GMOs, we are pretty much a leader in the world in a lot of respects. We are marketers in this country these days, not producers.

Dr Hearn—But these questions are very pertinent to where we will be in the next year or so because it is moving very quickly. As more GMO products emerge, both within Australia and overseas, the onus on segregation may well become one of the biggest challenges that not only government but also industry have in order to market. We can well foresee this becoming a problem. Only recently we have started to look quite closely at countries like the United States, who have many more products on the market at this juncture, and how they manage segregation. I have to say that, in some bulk products, we have a suspicion that segregation is not particularly well handled in the United States. But we do know that the United States is also having to look at that because that is where the consumer demand might start to focus—GMO versus non-GMO. If you do not answer that consumer demand, then you may have a problem in the future.

CHAIR—Therefore, AQIS's role with GMAC will have to be very close.

Mr Trushell—It is now, and it will be in the future. We have in the past and do at present liaise very closely with GMAC, as we will be doing with the OGTR, on any import applications to ensure that these risk management measures are put in place, particularly if we are asked to get involved with certifying exports along those lines. AQIS is always very cautious about getting involved in export certification for quality as opposed to meeting an importing country's requirement for pest and disease concerns for quarantine risks.

So an issue such as this is really an industry issue. We are talking about commercial decisions—which markets they want to go into, which markets want GMO-free product or want GMOs, as such. We have put to industry that it is a commercial decision, but AQIS could play a role in auditing and certifying at the border. However, they will have to bring extremely good documentation to the border for us to undertake that.

CHAIR—With the monitoring of events overseas, is there currently an arrangement whereby, if AQIS is privy to information about occurrences in a particular country, there is the means for sharing that information within the various agencies of AFFA?

Dr Hearn—Yes, within AFFA certainly. Also, I would be confident of that happening within the wider sphere of government under the interim office and later the Office of the Gene Technology Regulator; that office's whole purpose is to be a coordinator.

CHAIR—I take what you say about your being confident of that, but can you tell me the process whereby that information is shared? Is there an informal regular meeting set up where information is shared, or do you just simply rely on the information being provided but with no formal check to see whether it is being shared?

Dr Hearn—We have within AFFA an informal group—call it a working group—which draws together for periodic meetings covering the whole gamut of biotechnology and gene technology. I would think it will be meeting increasingly, but at present we meet on a needs basis. Any member, be it AQIS or a policy division or an industry division, can call for a meeting. It has a broad representation right across the portfolio. People bring to it their particular levels of expertise, including the Bureau of Resource Sciences, which also has a scientific background.

We meet quite frequently. I would say recently we have been meeting about once every six weeks. I would think that will continue now because there is a big agenda ahead, particularly now that the Office of the Gene Technology Regulator is up and the government has made its decisions on developing Biotechnology Australia, in which we are also participating. So, yes, there will be more frequent meetings in the future.

Mr Madden—In terms of getting information from overseas, we have AQIS representatives in a number of countries and also AFFA representatives and Foreign Affairs posts. They provide us with information in cables on what is happening in this particular area. There is a wide spread of information across the government as a result of that so that a number of people who need to know are aware of what is happening in major export countries.

Mr ADAMS—I just want to follow up on the issue of the canola seed coming in and the pollen transfer. I would have thought a legal situation would have developed there already. Surely, if a person felt that they had been invaded by pollen of that sort, they would want to take a legal position as far as their certification was concerned. Wasn't that given any consideration when the decision was made to let those seeds in?

Mr Trushell—Again, I think it is probably more relevant to talk to GMAC and OGTR about their decision on that. They are the ones that put in place the risk management. There is a lot of information and contention about pollen transfer—distances, mortality, different species, et cetera. So, again, it is GMAC that sets those risk management considerations.

Mr ADAMS—Would anyone else like to comment?

Dr Hearn—I would just make one comment there. We are in that area—and this is always a controversial term—'assessed reasonable risk'. It has to be done with the best scientific objectivity. So the principles for the import of gene material will be the same scientific principles that apply to material of other types, many of which have some risk. We see the words 'reasonable risk' in other spheres of government as well, and often there is a big debate about what is a reasonable risk. I am quite sure that in this area we will have some very difficult areas of assessment of reasonable risk.

It is not easy, and certainly on this side of the table we do not sit here with some sort of relaxed attitude about reasonable risk. You have to do it to the best of your scientific ability. That means not just government scientists; it also means, and will mean increasingly, getting in third party scientists, no doubt, to look at some of these, as we do in the SPS area, for example, where there are other areas of controversy about risk.

Mr SECKER—Which areas are they?

Dr Hearn—Sanitary and phytosanitary protection for importation of conventional material and products. You will always have people on two sides of a fence saying what is 'reasonable risk'. All we can do, both within government and industry, is to get the best scientific expertise that is available in the country and, if necessary, perhaps sometimes outside of the country to look at these risks and assess them in the best way possible and objectively as possible.

CHAIR—That raises the question of skill base, which I was concerned about with AQIS before. We do have a limited skill base; you made this point in your submission. What are you doing about it? Are you making recommendations to government? Are you trying to recruit from overseas? What are you doing to improve the skill base?

Mr ADAMS—What are we doing with training and skill level development in the universities?

Dr Hearn—As a department, we will draw that to the attention of the education departments. Also in this submission and elsewhere too we have drawn attention to the fact that the skill base in some of these areas in Australia will need supplementation. It is an issue of education policy as to how much funding will go into this type of training. That is one aspect of it.

The other is that, within the skill base that we have in Australia at present, while a lot of the skills in agricultural science do happen to be in a lot of public sector research, there are private sector skills out there too. Obviously there will be times when we will have to go and harness and pay, on an outsourcing base, for the best skills available elsewhere in order to assess particular developments.

Lastly, while I am not aware of it having been done yet, if we get something of sufficient magnitude that we feel we do not have the skills for in Australia—and I cannot imagine an example right now, but it could happen—then we may well have to harness again, on a paid basis no doubt, the skills of some overseas scientists. That has been done in other areas from time to time and, indeed, there are times when overseas institutions come to Australia to look at our skills where we have particular niche areas of expertise. Some of this is conjectural into the future, but not that far into the future because it is moving so quickly.

CHAIR—Yes, at the pace things are moving.

Dr Hearn—Absolutely. So we are not sanguine about it, but we will have to look right across the gamut and point out that within certain areas we probably do need to put more attention into the science.

Ms Greville—Perhaps I could just add to that. Within the context both of the national biotechnology strategy being developed on a whole of government basis under the auspices of Biotechnology Australia and, even more specifically, under the agrifood components of that which AFFA itself will be developing, the issue of the science base and the level of

expertise—not just on the regulatory side, the risk assessment side, but also on the development of biotechnological expertise side—have both been identified as needing attention. Those strategies or probably the first iteration of those strategies will be coming forward within the next several months. Those strategies will look at the issue of how we grow our science base and how we make sure that the demands both of the risk assessment side and the—

CHAIR—It is not something though that we can be complacent about, is it? It is not about how we can grow it; it is really about how we can fast-track it, isn't it?

Ms Greville—That is right. In some of its work, AFFA and its fellow SCARM agencies—that is, the Standing Committee on Agriculture and Resource Management agencies, the state departments of agriculture—have also begun to look at what the levels are. They have already identified, as a matter of concern, that perhaps the greatest level of expertise in biotechnology is in the medical and pharmaceutical side rather than in the agricultural side. That is a concern both in terms of our potential capacity to take advantage of the benefits of biotechnology but also on the side of assessing the risks.

So, yes, I think it is an issue that needs to be kept in the public eye. I think, as Dr Hearn suggested, there are both short-term measures and longer term measures. But certainly the longer term capacity for us to develop that self-reliance and expertise is something that will be a long-term strategic issue for some time, I think.

Mr NAIRN—It has been acknowledged that in this area there is not a great amount of knowledge out in greater consumer land and that there is a need for much more information to be got out. Has the department done much research on consumer attitudes in this area so that proper government information can then be designed and put out?

Ms Greville—A number of processes have gone on in the past, and several are going on now, to try to get an appropriate handle on what the level of consumer concern is, what the level of consumer information should be and to what extent there is misinformation affecting people's perceptions. It is not necessarily specifically AFFA research. There have been a number of research studies over the last several years, some of which have been conducted by CSIRO amongst other agencies. At the moment, under the auspices of Biotechnology Australia, which is the whole of government body and is located in the ISR portfolio, the government took a decision in the most recent budget to make $10 million available to that agency for a number of thrusts, a significant component of which relates to consumer information.

As the first stage in that process, some research is going on, as we speak, to try to identify where the particular information needs are and, from our point of view, interestingly, to do some work on whether there are a different set of information needs affecting farmers and rural communities that are perhaps identifiably different and might need to be treated differently than the swath of consumer concerns that are around generally. That process is going on at the moment. That will inform the sort of 'large scale'—and I use those words advisedly—consumer information program that will be managed under the auspices of Biotechnology Australia over the next two years.

Mr NAIRN—What role does AFFA have? What will AFFA be putting into that?

Ms Greville—AFFA is one of the five stakeholder departments within Biotechnology Australia. So we are part of Biotechnology Australia, and every initiative that Biotechnology Australia undertakes we are part of. The consumer awareness activities of Biotechnology Australia are being managed at officer level by a steering committee made up of five departments, of which AFFA is one. Biotechnology Australia's activities more generally are overseen by a committee of secretaries to the five departments and ultimately is responsible to the council of ministers, the five cabinet ministers who, including our minister, are directing the activities of Biotechnology Australia.

So we are there providing input from our portfolio's perspective to the process of having the research conducted, producing a brief and, ultimately, contracting probably with some private sector organisation which will be undertaking the campaign, however the campaign is designed. So, if the initial research reveals, for example, that there are particular and different information needs amongst farmers, producers and/or rural communities—all of which is reasonably likely—then there will be a component of the overall campaign which will be directed to those needs. In that case, I expect that AFFA would play a much more dominant role in designing that and arranging its delivery rather than just being one of five directing the whole process.

Mr NAIRN—So you would see yourselves as having a much greater role, particularly when it gets to farmers. That would be not only from the point of view of information about the technology in a general sense but, as asked about by one of the terms of reference of the inquiry, in ensuring that primary producers have access to that information. Do you see it being a lot broader, particularly for the farming community, than the general information that would also address the access aspect of it? In your submission, you talk about the private sector taking a lead role in that. But I think government probably needs to have a fair amount of involvement in it.

Ms Greville—Yes, and I think there is always an issue about what the appropriate balance of responsibility is in public information between government and industry. Certainly, consideration is being given to what the government's role is, and that issue has been under consideration for some time within government circles. Certainly, in my view, there is a role for government in providing information. I suppose where the line is generally drawn, in our opinion, is when it comes to product advocacy; we see that clearly as an industry responsibility. We need to make sure, from the government perspective, that the information that is made available is balanced and provides a good basis for people to make decisions.

In terms of farmers and rural communities, it seems to us that farmers have a range of information needs. Farmers are not only producers but also consumers. But as producers, they need access to information in making a decision on whether growing a genetically modified crop is in their best interests, considering all the issues that may come from that. So we are working through a range of strategies to make sure that that information is available to them.

CHAIR—Your own submission indicates that people want an open, transparent system. It would seem, both from overseas information and from the Consensus Conference that was held in Canberra—and you make this point in your submission—that the information has to be 'trusted'. If it is to be trusted, it therefore has to be at arm's length from government and from departments. This then comes to this whole question of regulation. We have received evidence from, in particular, Western Australian farmers, and we have heard of the New South Wales farmers conference that could not reach a decision about whether or not they were going to support genetically modified products.

It would seem, from both the evidence we have received and what you are saying in your submission, that what is required is regulatory authority that people can trust in. We talked before about fast-tracking the skill bases. Are we fast-tracking the regulatory process?

Dr Hearn—It is moving as fast as it can. I have to say that, up until the last few months, say, the pace has been frustratingly slow. I think now there is recognition across government—

CHAIR—Can you tell us why it has been so slow?

Dr Hearn—I am quite happy to stick my neck out in saying this, but I think it is partly because not only must the Commonwealth government and its agencies be got on side—that should be relatively straightforward, although it is a complex matter—but also every state government must be got on side. If you have one state government which is demurring from the general push of regulation or, indeed, the details of it, or the legislative details, then you do not have a national system.

This is a system where I use the words 'whole of government', and I actually mean the whole of federal and state government. If we are going to have a national system, which is our ambition—indeed, if it is to work, I think it mandatory that we do—then we have to have every state government on side. I think I can say with reasonable confidence that, subject to the legislative detail, we do have all state governments acknowledging that the regulatory system must be national. All state governments have now acknowledged that they will come to the party in terms of complementary legislation at the state level, because so much of this is domestic and primarily a state responsibility.

That has been part of the reason. I am not trying to simplify it or make excuses here, but I think getting a national approach has been part of the reason. The Department of Industry, Science and Resources has been pushing for some time now to get the states. But, as we sit here today, there is agreement on that and legislation is proceeding. The interim arrangements are there simply so that we do not wait until the legislation goes through. We can do certain things in an interim manner now in regulation terms, while the legislation goes through both the federal houses and the state houses.

CHAIR—This committee spoke to you when you were, I guess, wearing a different hat. But, if I go back to the trade inquiry that we did, one of the most important findings was about this lack of information and information getting through to the producer level. From our experience with this inquiry so far, that would still be the case.

On page 15 of your submission—and we are talking about the need for getting information and fast-tracking—I notice that you say:

Over the next year, the Bureau of Rural Sciences will be producing a series of publications explaining biotechnology, its applications and the issues that arise.

With the greatest of respect, that statement is so far behind the pace that it is almost laughable. It is also a worry when you read those words 'producing a series of publications'. Surely we have learnt the lesson that we have to get information out quickly to producers and in a form that they find to be user friendly. They have demonstrated on so many occasions, to both this committee and many other committees within this place, that the information they receive from departments like yours—in fact, the five departments that become part of Biotechnology Australia—is not user friendly and they do not use it. But here I am reading that we are still doing the same thing.

Dr Hearn—I will ask Ms Greville to supply some comment on that. But, clearly, communication is not just a publication. Communication has to be a multifaceted approach. Publications have their role—

CHAIR—It is one thing to say that, but what is being delivered on the ground?

Dr Hearn—I think it is going to have to be done by a whole range of agencies, and I do not think that just—

CHAIR—But again you are telling me 'it is going to have to be done'. With respect, I am saying to you that you are behind the pace. In giving evidence to us earlier this morning, you commented on how quickly this whole issue is moving. The pace is not going to slacken, so you guys are going to have to improve your pace.

Dr Hearn—Absolutely. I would not hesitate to say that is absolutely correct, that the pace has to pick up generally in this area. I think now a sense of urgency has arisen and is there—and I am not just talking about government; I am talking about right across Australia—but I do think it was slow getting there, and not just for any particular portfolio but right across the country. This is a continuous process of communication. I do not think these are one-off events. Communication has to be continuous. While BRS's role is, in a sense, a small role in a big totality, because it is a science bureau it will try to explain some of the questions, particularly as we get more research—and this is coming back to an earlier question—such as what is it that people are actually looking for and what is it that is concerning people? We know that people are curious about this, and we know that people are getting increasingly worried about it.

CHAIR—We can tell you that people are concerned about the safety aspect.

Dr Hearn—Sure, and what aspect of the safety is it? Is it environmental safety issues? Yes, there are certainly some of those concerns out there. Food is an area where people generally around the world tend to be conservative, and it is quite clear—

CHAIR—Basically you can split it into two sectors: the primary producers and the consumers—not forgetting that primary producers are also consumers. So basically there are two sets of information. I am reading your report and Mr Nairn has been asking questions about the sort of information that is needed, and I am not hearing how this information is hitting the ground now. Do you want to tell me? Have I missed something?

Mr Trushell—Perhaps I could make a comment from the AQIS perspective. We have been undertaking a fairly rigorous consultation process for quite a while now. We are doing that with a range of stakeholders, consumers, with most of our post-Nairn processes—

CHAIR—How do you conduct these consultations?

Mr Trushell—With GMOs. A discussion paper was developed that raised all the issues that were—

CHAIR—So I could go down into my state of Victoria and out into an area in my electorate, and I could do a survey and ask farmers and consumer groups in my area, 'What do you know about what AQIS is doing with this issue?' What do you think their answer to me would be?

Mr Trushell—I think you would probably get a range of mixed answers.

CHAIR—I think there would be deafening silence, with respect.

Mr Trushell—Industry organisations through our portfolio and particularly the ones that AQIS work with do a fantastic job. I think they have a key role to play here in disseminating a lot of the information down to the farmer level.

CHAIR—What have they done? How has it happened?

Mr Trushell—We have held workshops with the industry organisations and asked them to notify all of their base, all of their membership, that these things are going on, offering them the opportunity. All of our information is on the Internet as well. We have asked industry organisations to circulate that to all their members. We are hoping that those communication channels are opening up as well and assisting government departments to get that down to the farmer level in a form that is in plain English and is readable. A lot of our documentation that goes out is in that form. It is not highly technical. We do appreciate who our readers are, who the people are we are trying to get this message across to.

That discussion paper went out in a range of different forms. It ended up overseas. I think with communication, each side has a role to play in providing information and also seeking information. I know that, from an AQIS perspective, we had to put in place interim regulatory arrangements. As you have said, things have been moving very quickly and we are still in the process of developing those. With all of our activities in AQIS, we have very strong consultative mechanisms. We have industry consultative boards. We deal directly. We develop stakeholder lists for all of our activities. We advertise in newspapers, rural papers, whenever a major risk analysis is being undertaken. So it is the responsibility, I think, of other parties then to get themselves involved.

Mr ANDREN—Given that people do not trust scientists largely because they do not understand science, they do not trust chemical companies who have got this system by the proverbial, they do not trust bureaucrats and perhaps they do not trust their politicians, and given that farmers largely do not trust their peak bodies, this is a pretty tough communications exercise are you embarking on, isn't it?

Dr Hearn—There is no question that it is a tough one, and I go back to that point that it is a continuous one. I do not think it is a simple publication or a note in the press. That communication has to be continuous, ongoing and daily right throughout the whole workplace. That is how it has to be. It has to be a culture that says it is going to be like that.

But I agree with you entirely that the sense of mistrust generally around when it comes to complicated scientific matters is very high—and it is probably a healthy mistrust in some ways from people who, if they do not feel they understand, want to be damn sure that they do. You can see the extreme example of that in the United Kingdom where, because of mad cow disease, the mistrust of food science was extreme. Therefore, the whole area of gene technology has got caught up in that mistrust and the onus of proof has become enormous. The European Union now is threatening to, or may indeed have, put a moratorium on gene technology.

Mr ANDREN—We had some evidence here a couple of weeks ago from someone involved locally in research. I think he was saying that there is no worldwide inventory for intellectual property in this area that he could see. Also, there is a perception that the chemical companies, the Monsantos of this world, dominate. Those companies would like to think and foster the view that they do dominate in the hope that 'join us or perish' might prevail. What intelligence are you gathering on intellectual property? To what degree might we be able to, if you like, hang on to or maintain our control over the integrity of the research without surrendering it?

Ms Greville—The issue of intellectual property and its impacts on research in general, and biotechnology in particular, is an incredibly complex one. I think it is probably fair to say that it is clear to us and to most of the other people who are taking an interest in the development of biotechnology that it is not an area of widespread expertise.

In terms of what is going on in the context of strategy development in relation to biotechnology, intellectual property was one of the four issues that government tasked Biotechnology Australia with taking some immediate action on. It was identified, I think, as both a long-term strategic issue and also an issue that needed some fast action. In the consultations that ministers have held and which departments have held there is, as you have found I think, a great concern that intellectual property management is not being handled well in Australia and that the long-term implications of that could be less than desirable in lots of ways.

What you do about that is, as I said, a very complex issue. I do not think there is any single right answer about what you must do, even though a number of people have suggested particular models of how you could spend an awful lot of money and fix the problem. Certainly the position that we have come to and I think that other Biotechnology Australia

departments have come to is that there is a range of actions that need to be taken, some of which have to happen very quickly and some of which are longer term.

Biotechnology Australia is going to direct some of its $10 million funding into skills training in management of the intellectual property system that we currently have; that is, the patent system in Australia and how that works and how to develop expertise in it so that you know how to get patents and what to do with them. In particular for agricultural biotechnology, our position is that, as well as that being absolutely fundamental with our researchers and scientists needing a lot more of that expertise, we need to develop expertise in the strategic management of intellectual property. It does not seem to us to be logical either that you just take out intellectual property on everything you have and then clutch it to you forever or that you necessarily try to buy the intellectual property that you need—that, in fact, the best way to deal with the fact that we are a very small market with quite distinct needs is to develop capacity for strategic management and strategic alliance forming. I think we refer to some of these in our submission.

So, as well as the action that is being taken under Biotechnology Australia's auspices about fundamental skills training, there will also be some action taken in concert with industry—and at this stage particularly agricultural industry. But there could easily be a pilot for a wider application of it to develop expertise for training people in the capacity to understand what intellectual property they have, what intellectual property they need, what intellectual property they should hang on to, what they should trade, how they can leverage access to the technology that they do not have to achieve the end that they are looking for and how to play on the world stage in those sorts of skills.

When the five Biotechnology Australia ministers consulted in February with a range of experts, as they were instructed to do by cabinet, the point was made to them very loud and clear that there is a lack of expertise at that high-end strategic management and that some attention needed to be given to that as well as to the kind of basic training. What we are trying to do in the short term is put in place those sorts of capacities but also learn from the experiences that we have had—and we have had some; 'Australia Inc.' has had some of those experiences. CSIRO, for example, is developing a significant level of expertise in how to deal in its own intellectual property and has learnt some lessons, I think, from what has happened in the past.

As far as I know, there is no sort of complete database of intellectual property, although IP Australia does maintain a patent database. One of the things that people lose sight of is that it is not just who owns the patents that you need to know; it is those bits of information that are not on the public record. Not all patents are declarable anyway. In other jurisdictions there is the possibility of having secret patents. So it is about who has what, who is likely to need what and how you get access to it in a way that can further your own ends and understanding our place as a very small player numerically in that situation.

Mr ANDREN—It strikes me that one of the huge communication obstacles in all this rests with the chemical companies who over the years have delivered so much good, including increased productivity, but with whom there have also been negatives—and there have been some real negatives that have received a lot of media attention. This nexus between the giant chemical companies and this new technology is the thing that people are

really suspicious about. I think the chemical companies—from my humble position, I might say—risk being hoist on their own petard if they do not recognise this. Do you see that as a major factor?

Ms Greville—I agree with you that the level of suspicion and fear amongst people to whom we have talked about the long-term aims and sorts of Machiavellian plans, as they see them, of those increasingly large life science companies, as they call themselves now, is a huge impediment. It is one of the real contributors, I think, to people's fear of biotechnology developments. I agree with you that those companies need to address that, and I think it is increasingly apparent to them. Certainly in the dealings that we have had with a couple of the companies that have offices in Australia, they are by no means blind to that and are to a greater or lesser extent—

Mr ANDREN—Do you sense a willingness to share amongst them with, say, CSIRO or any quasi-governmental research organisations?

Ms Greville—I am probably not the right person to answer that question and you may have to ask them that. But we do sense from those companies a very real appreciation of the fact that they are losing the public relations battle and that they need to make what they consider to be their really genuine concerns for the good of us all more apparent. But for the sake of the argument, I suspect that—and as I said, this is my personal opinion, not any AFFA opinion—that is not quite the same as making commercial decisions about dealings with CSIRO that may not be in their commercial best interests. They are commercial operators; their obligation to their shareholders as they see it is to get the maximum return. But within that, they are very conscious, in my opinion, of the impact that their decision making has on the public perception of them. They are very wary to make sure that they are not compounding a difficult situation.

Mr SECKER—First, I would just make the comment that I think 30 seconds of television will have more effect than 30 workshops or 330 bulletins. I am just not convinced that there is a strategy out there, in either the private sector or the government, to counter the huge amount of misinformation that has been put out, especially in the last six months. Can you convince me otherwise?

Dr Hearn—Probably not. Biotechnology Australia is to develop strategies quickly. The government has asked Biotechnology Australia, the umbrella body, to move very quickly on this. That will include further enhancement of any information flows that have gone to date—which, as I have heard from the committee, you considered to be inadequate; that has been stated loud and clear. So I think you will see much more effort put into that and much more research into it.

As to the means that might be used, it depends very much also on the audience. My experience of communication in agriculture particularly is that quite often rural radio, for example, can be a very effective means of communication. Many farmers with whom I have dealt have told me that that is their means of communication—when they are on the tractor, or whatever, and they have the earphones on, they can listen to the radio. It is also a matter of getting peak time. But also we do know that pamphlets can be of very limited value, no

matter how well written they may be, because some people just do not read them and do not want to read them—and that is their right.

I think a whole range, a whole gamut, of communication has to be done. Workshops do not perform a role necessarily for everybody in society. But workshops at which there are the right people—people who will subsequently communicate at a much more grassroots level—can have some effect. But, again, if we rely on any single mechanism, we will fail. It has to be a whole multiple of mechanisms.

CHAIR—There also has to be the follow-up.

Dr Hearn—There has to be the follow-up, and it has to involve industry. To be fair to industry in the agricultural sphere, I believe that the state and the national industry organisations do recognise that they have a role in this area. They too are searching for the best means by which they can communicate to very widely dispersed audiences. But we will need their partnership completely—and I have to say that I think we are getting their partnership. The NFF in this town is only too willing to talk and be involved and get itself involved as best it can. It can only do so much from Canberra. The state affiliates to the NFF also get involved—the cattle councils and all the other councils we have. I think they are all there. They all also have their limited resources and they have other jobs to do as well. But it is a huge task. Yes, I would not say that it is some sort of simple task and that somehow we have a one-sentence answer for you, because that would be simplifying it.

Mr SECKER—On page 18 of your submission, you talk about the Plant Breeder's Rights Act in terms of allowing primary producers access to gene technology. Do you see any problems with that operation? Could you perhaps tell us of any changes that might be proposed to protect those PB rights?

Mr Waterhouse—I am not sure whether I entirely understand how far you want to go with the question. PBR or plant breeders' rights are a balance between the monopoly given to a particular breeder and, in exchange for that monopoly, access to the technology by the public and producers particularly. One feature of PBR that is very important is the fact that the owner, the breeder of a variety, must make that material publicly available at reasonable quantity, quality and price. That is a feature of PBR that is not reflected in other types of intellectual property protection where you can, in other forms, register intellectual property and then keep it to yourself, effectively, one way or another. PBR does not allow that. Possible changes to PBR might be that we extend the conditions of that access to make sure that not only are the plants available but also the products of the plants and so forth are available.

Mr SECKER—Do you think that those changes could help access for farmers? Could they help access for other breeders as well?

Mr Waterhouse—In PBR—and this is a parallel with patents—you can use a protected variety for breeding new varieties at any time. The difference with PBR is that, once you have bred this new variety, you can commercialise it if you have made significant changes, important changes to the variety. Those same characteristics are not available in patents. If

you were relying on others' technology, you might then find that you do not have freedom to operate the derived variety.

Mr SECKER—You are talking about significant changes, but let us put it on a basis that I can understand. Say, with a lucerne plant you might want to cross Trifecta with a Septre and get what to the normal person would look like a similar plant with perhaps slightly better winter growth patterns and pest tolerance. Is that enough of a change to be a significant difference?

Mr Waterhouse—Yes. While we do not want to get into the technicalities of the act, judged against performance and value—and lucerne is close to my heart—any change in pest and disease resistance is a very important aspect of these varieties. We know what happened in the late seventies where we were caught out with one pest, and we really need to guard against that. In the PBR context, we would say that, yes, breeding with the addition of one characteristic for disease resistance is an important change. It allows the breeder of the now new variety to commercialise it without reference to the breeder of the first variety. It very much follows the pattern of the historical incremental breeding activity: one breeder breeds something and somebody adds something to it. We do not necessarily see that as needing to be controlled in IP under plant breeders rights; that should be open and free. I should say that that is enshrined in the legislation.

Mr LAWLER—I just go back to the education/public relations side of this. It seems to me that, with science based people, whenever there is a need for information to go out, it always has to be pasteurised, sanitised and researched and the phrases to do with research that you have used in your comments tend to come up over and over again. People who put out information opposed to all this gene technology do not worry about all that stuff.

I am not for a minute suggesting that you should put out half-accurate information. But I wonder whether there is much drive for getting the information—and I think Gary alluded to this before—that is coming out either from scientists who are layperson-literate or from people who are more the public relations type rather than scientists. I think we all have to be aware that the public do accept that this is an ongoing learning process, and I do not think they expect us to have the right answer to every comment that comes out. Would you accept that?

Dr Hearn—Yes, I think the skill of communication from science to non-scientists is a big challenge and will always be there in many fields. This one is a particularly complicated area because we are right at the forefront of science here. Broader strategies are being developed now, and Biotechnology Australia has to get something up to government by the end of November in terms of a broader strategy.

I think part of the answer to this is outsourcing also, to get firms that can help—and this is true of other areas of communication, and it will be done. We have to say, 'All right, if the message is not getting through, then we have to find a wider way of discovering what are the best means and mechanisms'—and not just the institutions, but the best language, the best mechanisms. It may well be that we will have to contract top rate public relations type people who can say, 'Well, this research shows where the real worries are'—and there might be dozens of these worries out there under the different headings of health, environment,

intellectual property, monopolistic practices and so on—and then start to communicate balanced information. I do not think it will be the role of government to oversell or undersell this science, but it has to put a good balanced approach as to what it means. We ignore it at our peril. It has huge competitive opportunities for Australia. At the same time, we have to be realistic and we have to have the confidence of the public that we do also recognise the risks and we are prepared to talk about the risks. It has to be done in language that is understood.

It is a huge challenge, as you quite rightly said, Madam Chair. In the trade area we have some of those same challenges. Words are thrown up that are just words. They mean something to people who live and breathe them every day of the week, but they might not mean something to people who do not live and breathe them every day of the week and who have other things to do. It will need the skills not just of government but also of communicators outside of government.

Dr WASHER—I would just make a comment on the media. Just recently, within the last two weeks, *Four Corners* has had a whole program on this, both the *New Scientist* and the *Bulletin* have run articles on it and one of the local farmers' magazines in the west has run an article also. So I think it is starting to come through.

But I disagree with the remark that we need to educate the farmers first. I think the main person is the consumer. Mitch Hooke made a great statement—that he, as Chairman of the Australian Food Council, would make every effort to educate the consumer. I think that is where it needs to come from because the bulk of GM products on the Australian market are imported. There is only Bt cotton, 20 per cent of that currently in Australia. And the canola is still on an experimental basis and not being released here for consumption. So the bulk of GM foods is certainly imported from the States currently.

That leads to a problem I have in the mandatory labelling of substantially equivalent genetically modified food as passed by ANZFA. Let us look at the EU because this is where the major hysteria is—the guy with the red flag walking along the road with the big Mercedes Benz coming on behind him; it is going to come and no-one is going to stop it. That hysteria seems to generate mainly from Europe for the reasons I think some people have alluded to. What percentage do you think the Europeans will accept as being GM free? I mean by that, what percentage contamination will they accept, if any?

Dr Hearn—You are asking about the definition of 'substantial equivalence'?

Dr WASHER—Yes.

Dr Hearn—Two things. Firstly, we agree with you entirely: unless the consumers are on side, anything that happens on farm becomes secondary because you sell your produce at the end of the day to consumers. So I agree entirely. Certainly we are not just saying it is one group in society. Consumers will call the shots at the end of the day, as ever.

To come back to the substance of your question, the European Community at present has given no indication of what it is. I think it will come up in the WTO context. The Americans have made it perfectly clear that labelling, intellectual property and those matters relating to

science, and particularly to biotechnology, will be in the next round. Whether we like it or not, it is there. Issues such as labelling and what is a 'reasonable substantial equivalence' will come up there.

The number that I have heard of—and I cannot commit the European Union to this—is five per cent; down to five per cent is the sort of attitude that you hear in some countries. I have not seen any legislation on this, but down to about five per cent is 'substantial equivalence'. Anything that has an alteration beyond five or 10 per cent—and I am looking at John Madden to see whether he agrees with that—might be considered a substantially altered product and would therefore have to be labelled. We do not have an international rule on this, but it will certainly come up.

Mr Madden—In terms of GM free, I think the Europeans are using a two per cent cut-off in legislation which will be brought in in the next couple of years or effective in the next couple of years.

Dr WASHER—Perhaps I can follow that through. One of the issues that was raised was the canola cross-pollination problem. I do not know the percentage but, if I were to grow a crop within a metre of a vast crop of canola, my information about pollination from people who are experts in this is that probably we would have less than five per cent or maybe a couple of per cent getting cross-pollinated. The bulk of pollination in canola is done from within the crop itself. Of course, cotton is not a problem because pollination is not a problem in cotton from that point of view.

I think we would get away with that. That is not a major problem. If you compare that with the chlorinated pesticide damage in Western Australian alone amounting to thousands of hectares of country, both in the south-west because of potato growing and in Kununurra because of cotton growing, this is nothing, absolutely nothing. It is ironic that we need genetic engineering and dehalogenasers to fix it up.

Another comment I would make is that people mention bovine spongiform encephalopathy, which is the equivalent of Creutzfeldt-Jakob in humans. That was saved by genetic engineering of growth hormone. So it seems that, even with the strange arguments we use against this, we always use science and technology to fix it up.

Perhaps out of curiosity I could mention one other thing. CSIRO has some new promoter gene technology that is really good. I am told on fairly good information that this was to be sold offshore to Rhone Poulenc without reasonable access being given to Australian industry first. After being challenged, it has now retreated from that position. Perhaps someone could comment on what policy we have relating to those types of regulators—and perhaps this is not your field—with the selling of that type of technology first to Australian industry.

Dr Hearn—As best I can, I will give a limited answer to that. We do not have regulation that stops a commercial operator, including in this instance CSIRO, unless a decision were made that there be some instruction from government to CSIRO as a statutory body. They are given a free commercial hand, and increasingly they are being asked to be commercial. So, with selling off which sometimes may appear to be done prematurely, certainly for the private sector, that at this stage is their decision, as long as they are within

the rules of PBR or intellectual property. If they choose to sell at a time that might be perceived to be early—and they are answerable to their shareholders, and CSIRO is answerable for its commercial activities ultimately to the government—they have to answer for that.

The problems that we hear back from commercial operators is that very often they have a liquidity problem. They are often small operators, particularly in the private sector. As for the research, in our submission we have tentative numbers of some $100 million a year being put into this research around Australia—these are very tentative numbers—and about $40 million of that is CSIRO. So there are big players in it. There are about 20 small biotechnology companies in Australia, some of them doing some very good niche areas of work.

But often it is the issue that we have touched on here—the structure of our industry. We do not have a large number of multinational companies in Australia of the size that you see in the United States, Europe and Japan, big economic powers. Therefore, there is often a quest to try to quickly realise liquidity or, in fact, they may not feel they have the funds to protect a patent. Protecting a patent is an enormously expensive operation; it can cost $500,000 to $1 million a year. Those sorts of things often drive people into some sort of early action.

It is the experience in Australia generally that we have some very good research in this country in all areas, including biotechnology, but very often at the pilot stage the research drops off. This is because the commercial operators do not take it up. What is the answer to that?

We cannot make regulations—well, government will do what it wants to do, but I do not believe that people are advocating making regulations about this. We can encourage better information, which we have discussed. We can also encourage joint ventures and alliances, both within Australia to get the best possible threshold size of organisations to handle these things—again, that has to be with the free will of the operators to do that—and also internationally, which Australia is doing to some extent. I do not think we are without some international alliances in areas of science and technology. Also, we can help with trying to get international information as well. They are the roles that can be played.

But we do seem to have a bit of a structural problem here in terms of the commercial operators picking up some of this expensive research. We may be losing some ground because of that.

CHAIR—But in your submission you make the point that the role of government, in regard to commercialisation of research, is to look at the tax act and make some tax changes.

Dr Hearn—Two things about that. With the tax act, what we were talking about there was not in the broad area of the tax debate, which no doubt we will hear about more tomorrow and also when the Ralph committee comes through; we were reflecting there the strong views that we hear from the science community in the area of capital gains tax. I know that those views have been communicated to Mr Ralph. I also know that, while it is

still something that has to be discussed when the government's decision comes out, the whole area is obviously being looked at.

But just within the limited area of the debate about the science community, there is a real feel about capital gains tax—and they have been saying this for some years now, not just in the recent debate about tax. This concerns the acknowledgment of the role of capital gains tax in Australia vis-a-vis other countries in the research area. Research, by definition—certainly long- to medium-term research—is high risk, otherwise it would not be research. There is the feeling that, to get venture capital into that area, there needs to be a look at the capital gains tax regime and how it works. That is something that the science community has been saying for a long time. I do know that—while I do not know the results of it because it is something that is with the Treasurer—that has been communicated to the Ralph committee loud and clear. So we have been talking to it about that.

The second point about commercialisation is that, within this portfolio, there are some 14 research and development corporations ranging in size from the larger ones, like the Grains Research and Development Corporation, down to the much smaller ones. They are putting some funding in which I think, from memory, is about $12 million per annum. So about $12 million per annum is going into gene technology. The minister has only recently encouraged them to look even more actively at the science of this area.

These research and development corporations answer to their levy payers as well as to the government, and they are well aware of the importance of this area. They are tasked with also trying to get into alliances to enable there to be commercialisation. One of the best ways of getting commercialisation if you are going to put public funds into public research is to have an alliance with a suitable private sector partner. Then, when you are successful in that area of research, with some good luck you have got the mechanisms for commercialising it straight away because you have a private sector partner who has put money in as well as having the capacity to take it out and commercialise it. They are being encouraged to have more and more of those alliances—using the levy payers' and the taxpayers' money in alliances with the private sector in this area.

CHAIR—Can you comment on how general the support is for establishing a system of end point royalties?

Mr Waterhouse—In the current debate, end point royalties are seen as being some sort of counterpart to royalties either on the seed or the use of technology. I answer not from a plant breeder's rights perspective, because end point royalties are being mooted as purely commercial operations and they can be done without any form of intellectual property, in fact, under normal contract law.

The use and the role of intellectual property in end point royalties is to underpin whom you might deal with, what sorts of contracts you might suggest with whomever you choose. The intellectual property concept allows you to restrict others from the use of your, in this case, variety. But once you put your variety out on the market, you either have to choose to recoup your investment on the seed or, failing that, you have to work out another way to get some return.

If you charge on seed—and this has been the dilemma in Australia—then it adds to the premium cost of that seed, the up-front cost for producers. That is a huge disincentive for people to switch from older style varieties into newer style varieties. That, coupled with the fact that farmers are in the fortunate position of being able to save their own seed from year to year, means that there is a very low seed replacement regime in Australia, especially for field crops. In a way, that exacerbates how much you could charge on the sale of the original seed. We believe that, if you only get a small chance to recoup your investment before the farm saved seed issue becomes important, that provides a significant disincentive for you to produce new varieties.

The industry itself has taken on the debate and said, 'Well, how do we provide an opportunity'—not a guarantee, but an opportunity—'for those breeders of good and elite varieties to get some sort of return? We want the material, we want the new varieties, but we can't afford to pay the up-front cost of $50, $250, $1,000 a tonne premium even before we establish the crop.' So industry is saying, 'Well, look, if we could pay an end point royalty, a much lower royalty, that would be good because it would reduce our input cost; secondly, it would split the risk between us and the breeder; and it would also capture all those environmental disasters that we see.' If you are not paying for expensive seed for sowing and only paying on the yield of the variety when you deliver it or commercialise it, it is a very big incentive.

Equally, you might think that would also encourage producers to look around to see what new varieties might be available—not just the typical idea of a higher yielding variety, but varieties that are targeted to specific growing markets. An end point royalty may allow producers more flexibility to switch between varieties. In fact, even some seed companies are mooting the idea that they might give seed away if they could pick up an end point royalty for the benefit that their variety is actually delivering.

CHAIR—So you would say that there is fairly general widespread support for EPR?

Mr Waterhouse—I think, yes, but the devil is in the detail—

CHAIR—Isn't it always?

Mr Waterhouse—and nobody is prepared to sign an open-ended contract on this. But now the debate has moved forward. It was taken forward in the grains week in Perth where people said, 'This is not "the way" but "a way" to provide incentives to provide access to the best materials in our market.'

Mr SECKER—It is also an incentive against the terminator gene, because there is no need for it if they are getting paid for it at the end.

Mr Waterhouse—Absolutely. I did not want to jump into the terminator debate because that is best argued elsewhere. But if you can eliminate all the trading between sowing and delivery at, say, the silo in the case of field crops, then it fits within the normal agricultural practice of over-the-fence sales, mixed loads and the whole thing if you can establish an end point royalty system. Our producers are now at a view of saying, 'Look, if we can, we want to avoid any extra administration on the farm. If we only just pay at this one point, as we

are used to paying a levy, then that would be a sensible outcome. Let's investigate it. Let's work out what sorts of commercial practices might occur.' Also, industry itself is saying, 'Well, look, perhaps we can investigate some sort of code of contact to introduce people to what end point royalties might be.'

CHAIR—I would like to thank all of you for coming along this morning, and thank you for the very detailed submission.

Proceedings suspended from 10.55 a.m. to 11.05 a.m.

HANKIN, Mr William Anthony, President, Heritage Seed Curators Australia

CHAIR—Welcome.

Mr Hankin—Heritage Seed Curators Australia is a non-profit organisation, membership based, scattered around the country.

CHAIR—We have received a submission from Heritage Seed Curators Australia and have authorised its publication. Do you wish to make an introductory comment to the committee before we begin our questions?

Mr Hankin—I have a number of introductory comments and a document which I think is worthwhile tabling. During the last hearing with AFFA representatives, a question was asked about genetic pollution in canola. This document came to me on email from Canada. It says, 'From *Nature Biotechnology*, volume 17, by Brian Hoile, August 1999.' It is entitled 'Canadian farmers seek compensation for genetic pollution'. I had no idea I would be presenting this, but I have it here.

CHAIR—Yes, we will certainly accept that.

Mr Hankin—It simply says that farmers whose canola crops have been affected by cross-pollination via insect vectors, bees, are seeking compensation because they cannot export into their organic markets, as in the past, and they certainly cannot export into non-organic markets into Europe. The Canadian Farmers Federation is requesting that the Canadian government pass legislation to regularise the situation so that compensation can be gained.

On the issue of canola, so far I have been to two hearings and there are certain issues that have not come up. One is that canola is a Brassica. It is an extremely small high-oil seed. I will talk detail here. We are talking about something, the handling of which causes spreading. This spreading occurs between where it is grown and where it winds up in the port—because we are talking about an export. We are talking about farmer trucks delivering to grain terminals, onto trains or to bulk handling facilities in ports. That involves the spreading of genetically engineered canola over a huge range of territory.

Canola is a Brassica, and its potential for cross-pollination with weedy relatives is quite high. So you will have weedy relatives in Brassicas which are along the roadsides between our farm fields and our ports. Canola is quite specific; it is a rather special case. With other GM crops, like soya beans and corn, those kinds of risks are not there. Because they are domesticated crops, there are not quite such the weedy relatives that you are talking about—larger seed, et cetera. But the potential with canola for problems is extremely high.

When Scott Kinnear addressed you in Melbourne five weeks ago, he presented you with documentary evidence that AgrEvo was already doing trials in Australia with somewhere in the vicinity of 2,000 acres of GE canola. Nobody knows where those trials are taking place. There are something like 120 trials across the country. I have talked to Scott about this since, and AgrEvo are very reluctant to disclose—in fact, have not disclosed—where those crops are so that neighbouring farmers can see whether they will get genetic pollution

happening. This is not necessarily organic farmers; this might be conventional farmers who wish to sell into Europe, as we did earlier this year. So canola is a significant issue.

I was making notes as the AFFA evidence was going forward, and there are some interesting things that I would like to draw to your attention. There were some underlying assumptions in the AFFA presentation. One was that genetically engineered crops are inevitable; another is that they are profitable; another is that they are good for farmers and consumers, and that they are wanted by farmers and consumers.

CHAIR—Perhaps I could interrupt you there. As chair, I and members of this committee have taken AFFA and its various people to task on many occasions. But I was listening to their evidence very closely, and I do not think that, in fairness, they were promoting genetically engineered crops as being good for farmers and consumers. They were talking about opportunities and risks—and I did pay very close attention to their submission. I do not think it is the role of any of us, whether it be a witness before this inquiry or members of this inquiry, to be interpreting what other people are putting before us. But please continue.

Mr Hankin—I did hear that consumers will be managed and that there will be a public relations campaign to manage consumer response to GE crops—and presumably this will be using taxpayers money. I wanted to present those ideas because, if we look at the whole issue of genetic engineering, it really is not something that one treats in isolation. Genetically engineered crop varieties are best seen, I think, as yet another step in what we could call the development of agribusiness over the last 70, 80, 90 years. That has seen the development of big farms, big farming businesses, where a farm may make $30 million.

I was talking to the owner of a property in central Queensland last night. In a good year, he makes $30 million. But in bad years—and they are frequent—$5 million to $6 million losses can be quite common. The nature of farming has changed over the last 100 years in Australia very dramatically. We are not talking about farmers and farming communities. In a very real sense, we are talking about agribusiness. Lots of properties are not owned by the people who manage them. Many of them are owned by big companies. That is a sector wide thing. It is not just confined to cropping; it is also in beef, sheep or whatever.

The interesting thing about all this is that, over that period of 100 years, there have been what are called ‘terms of trade’. What farmers get when they sell their crop, the value they get back has continually dropped over that 100 year average. There have been exceptional periods where it has been different—during the Second World War, the First World War and the Korean war. But, basically, we are selling our export crops into declining world prices. This is clear with wool, it is clear with beef, it is clear with wheat and it is clear with virtually all our crops. I speak as a farmer who for 14 years has lived on the land in East Gippsland. There are some exceptions, and dairying particularly is a good exception.

CHAIR—Just remembering that we are inquiring into access of primary producers to genetically modified plants, let us consider the question that you have raised—and it is a very valid point—about farmers producing their crops and getting less in return, and those crops being sold into markets and Australian farmers unfortunately having always been in the position of having to be price takers, unless they have developed a particular niche

market. There would be some people who would say—and there have certainly been people before our inquiry who have made the point—that genetically engineered crops are advancing in various parts of the world, that this will be the way of the future and that, unless Australian farmers have access to these crops, they will be further disadvantaged than they are now. What does your organisation say about that?

Mr Hankin—I would suggest that, given that Australia as an export trade player is a small player worldwide, it makes sense to examine the opportunities that lie before us as a country. The pattern of the past 100 years has been just selling into world markets with wheat, with wool and with beef where the return has been declining. To be frank, our rural research industries, such as CSIRO, such as GRDC, have continued to recommend the further development of that pattern. GE is another example. It is the latest example of continuing to recommend that process.

There are alternatives. There are niche markets which Australian farmers could sell into. By the way, with GE—just to answer your question—segregation is happening in the USA of GE versus non-GE. Major grain elevator companies are saying to farmers, 'Segregate.' They are offering a premium of 10 per cent for non-GE. That is happening now on the American crop with soya beans and corn. Monsanto's value by shares has dropped 11 per cent in the last fortnight. Deutsche Bank, which is the largest bank in Western Europe, has said to its customers, 'Sell Monsanto.' I think we are talking about a technology which does not meet consumer demand, does not meet consumer desires and wishes. That is the fundamental point.

Mr ADAMS—You see it as being pushed a bit.

Mr Hankin—Yes, and I sense that that was happening with the AFFA presentation here before, when there was talk of a $10 million fund, part of which would be used to manage consumer expectations or wishes. I just wondered about the use of taxpayers' funds to manage consumer sentiment about their food.

Mr NAIRN—I do not think the word 'manage' was used, with respect. It was for the giving of information.

Mr Hankin—Actually the word 'manage' was used because I quoted it, and I would have thought it meant persuaded. But the word 'manage' was used.

Mr ADAMS—Perhaps I could just explain to you, though, that they were actually responding to a set of brief questions that this committee is looking at. So I think the question they were answering in that regard was: what impediments would there be for consumers in Australia? They have listed them, and then they have listed options that might answer them. So it is a series of options. Like the chair, I do not think we can say that they are actually pushing this position. They have responded to the questions laid down by the brief by this committee.

CHAIR—Part of their responsibility is getting the information out to both primary producers and consumers. It is then up to the primary producer and the consumer, once they have the information, to make an informed choice. Could I just encourage you to perhaps

wind up your introductory remarks. I am sure a number of us have got a number of questions we want to ask you.

Mr Hankin—Thank you. I suppose I would use the word 'vision'—it is like a real paradigm—in terms of agribusiness being seen as a way forward for Australian agriculture. There are alternative paradigms.

Farmer prosperity is important; it means regional country prosperity. At the moment in large areas of Australia that prosperity is absent—and we saw the results of that on Saturday in the state election in Victoria. It is important that our farmers and the adjacent communities be able to access good quality markets, good value prices. That is important. As a person who has lived in the bush for 15 years I think that is very important. And it is important that their families have jobs.

I would suggest—and Scott Kinnear has already presented on this—that the market that is emerging increasingly globally is what I call 'sustainable ag', 'organic ag'. That is, products that are coming from consumer demand for organic products. That is rising in the order of 10 per cent per annum. On Saturday I was talking to a representative of Coles. He said, 'We can't satisfy demand.' This means that prices are high. This means that farmers can make a living quite well in this area if, in a sense, government agencies start to point out these opportunities to our farming communities.

I will stop with that particular issue now and raise a separate issue. One of the things that concerns our association is that we have a very human centred perspective on this whole thing—what I continue to call 'genetic engineering'. Many people with whom I have contact and have talked to are concerned about the ethical, moral aspects of this whole technology. Some people have said, 'Look, it is not appropriate for humanity to be doing this.' I agree with them; I do not think it is an appropriate technology for us to be involved in. Just because we can do it does not mean we should. There is the saying that this is something similar to the Sorcerer's Apprentice. We are tinkering with things that we do not understand. The DNA, the germplasm of life, is an extremely complex thing, an incredibly complex thing. We do not know the long-term consequences of mucking around with the DNA of a crop. I have heard it said that it is an extension of traditional plant breeding; it is not.

With the literal process of creating GE crops, there are two main technologies. One of them involves coating fragments of gold, flakes of gold with DNA. Effectively a gun is then used to shoot those flakes into cut up cells of plants and then there is tissue culturing. That is not scientific; that, to me, is a scatter-gun approach and then seeing what one has got. It is not technically precise. It is a very hit-and-miss affair. The next step in that process involves using an antibiotic to kill off, to test to see whether the DNA that has been inserted has taken. The ones where it has not taken die; the ones where it has taken survive. That is a fairly odd process. It spreads antibiotic resistance.

My submission has in it an appendix from the British Medical Association stating, on behalf of the association, that: 'We, the doctors of Britain, think there should be a moratorium of five years on GE crops.' That is not exactly a radical organisation; it is a very conservative organisation. But, speaking on behalf of the people of England, their patients, that association sees potential risks here. So I say, 'Whoops a daisy, pull it up, stop.'

I recognise that the companies that are involved in promoting GE crops are huge; Monsanto, AgrEvo, Novartis, et cetera, are huge companies. They have spent billions of dollars. Monsanto at the moment is reported to have spent close to $9 billion on its GE program. If it fails, this company will go belly up. There is enormous pressure from these companies worldwide—not just here in Australia but worldwide—to have these crops introduced, to have them marketed and to have it done quickly, whatever the risks.

I have in front of me here—you have possibly seen it—a presentation that comes from Monsanto. It is a very professional, slick presentation. It says, 'Food, health and hope'—but I think the reality is quite different. The ethical issue is extremely fundamental here, but it has not been discussed or debated. If one were to reverse the perspective and say, 'Right, how would the organisms being altered view this process?'—because they are alive, they are not machines—the answer would be, 'It's gene raping.' That is a very emotional phrase, but that is in effect what is going on. I will finish there.

CHAIR—Are most or all of the members of your organisation farmers, or do you represent a cross-section of society?

Mr Hankin—If I were to do a postcode analysis on our database, which is the simplest way of doing it, we have a membership base which is roughly 55 per cent rural and 45 per cent metropolitan, all over Australia.

CHAIR—So you have a cross-section of people?

Mr Hankin—Yes.

CHAIR—We can see that this is a topic that you feel passionate about, and I think when we met you in Melbourne you indicated that. Can you describe to us any circumstances in which your organisation would actually agree that there are any benefits to genetic modification of plants and organisms?

Mr Hankin—The one area where I see potential benefit, real benefit, for people is in the area of medical use. In this area I think there are substantial benefits possible for individuals. The key thing available in this whole medical area is that individuals have the right to say yes or no. If a technology which promises to relieve a disease is available and a doctor says, 'Look, this can help you, we think,' the patient who has that complaint can say, 'Yes, okay,' or 'No.' I think most people would probably say yes.

CHAIR—I think most people would agree that, whether we are talking about genetically modified products or non-modified products, our regulatory process is absolutely vital. Does your organisation feel that it is possible to develop a regulatory process that will ensure that any risks with genetically modified products are contained?

Mr Hankin—This is a good question. I do not pretend to have any specific technical knowledge about this issue, but late last year I was listening to *Late Night Live* with Phillip Adams who had Rivkin on as his guest.

CHAIR—Is this Dr Jeremy Rivkin?

Mr Hankin—Yes. Rivkin said, 'In order to assess risks in this whole area, we need a science of predictive ecology'—and we have none. So I would say to you that we need a science of predictive ecology, an understanding of the ecology of organisms and how the whole network fits together, the whole chain of life in a sense fits together, and what will happen when we fiddle with bits, if we fiddle with bits, if it is right that we fiddle with bits.

The canola example we talked about earlier is quite a good one. Canola pollen does spread with insects. Canola as a crop does have weedy relatives. The seed is quite small and it is hard to prevent it being dropped on the roadside. A farmer would say, 'Look, if I lose a kilo on the way from my field, my paddock, to the silo, it doesn't really matter.' But what about the potential for something going wrong in the process? I am not talking about the silo but about then going to the port. I have a friend in this association who is involved in CSIRO. This is his area of expertise, and he has been very keen for me to say this specifically about canola. He is in post-harvest handling. He said, 'Look, the risks here with canola are significant.'

Mr SECKER—On page 8 of your submission, you refer to Monsanto's inadequate testing of GM soya beans and Bt cotton.

Mr Hankin—Yes.

Mr SECKER—Do you have a source for that information?

Mr Hankin—Yes. That emerged from a magazine interview with the British scientist Arpad Pushtai. He mentioned—and I do not have a copy of that interview with me—that the Monsanto tests specifically on Roundup Ready soya beans involved adult rats. Twenty per cent of what was being fed to these rats was GE, 80 per cent was not. These are details of the actual experiment. The experiment went for a month. There were no substantial changes in the rats so, therefore, they concluded that it was safe.

As a scientist, he was saying, 'Look, this doesn't make sense. The individuals who are most at risk when you feed a new food are the ones who are creating body weight, body protein, body fats, and they are your children'—not your adults because they are, in a sense, on a maintenance diet. The body structure of adults has been formed. He said that it would have been far better and made far more sense for Monsanto to do a trial that involved baby rats with perhaps 100 per cent GE.

Dr WASHER—Would you be able to supply that source to us?

Mr Hankin—I can certainly get it, I have it on my hard disk, yes.

Dr WASHER—If both GM soya beans and Bt cotton were produced by traditional means, what would be the difference?

Mr Hankin—I am not sure of the significance of your question, I am sorry.

Dr WASHER—Say, they were produced by traditional breeding rather than by the quicker process of genetic engineering.

Mr Hankin—I follow, yes. Specifically with the cotton, I would suggest that it is impossible to cross the species barrier. That nature of species barrier you are talking of is Bacillus thuringiensis, which is the bacteria that produces the toxin that is being inserted. The interesting thing about the GE cotton is that the toxin is produced in the entire plant continually in the order of 10 to 20 times more than it is produced by the natural bacteria. They have reinforced the effect to get a greater effect. I suggest that, if Bt cotton is to be grown in significantly large areas, effectively you will wipe out all of the insects consuming the cotton that are susceptible to Bacillus thuringiensis. The ones that survive will be resistant. Very quickly you will have an insect population which is resistant to that variety.

Dr WASHER—That may be the case or it may not. That is fairly strong hypothecation.

Mr Hankin—No, it is not hypothecation. It has actually emerged already in Louisiana in the United States.

Dr WASHER—Yes, and someone could argue, 'Well, they can come up with another solution.' But in the circumstance of Roundup Ready soya beans and Roundup Ready virtually anything, I would suggest that they could be bred normally under traditional conditions, just as triazine resistant canola has been bred by traditional means. You could have no argument against those situations if they were under traditional means, which are slower and certainly more risky.

Mr Hankin—I would not have a comment about that, no.

Dr WASHER—For example, if you were to cross varieties of wheat genes, you would be mixing 30,000 genes. If you were to put one frost-resistant gene into wheat, you would have a far greater chance of working out what the end result would be—that is, far greater than if you were crossing 30,000 genes.

Mr Hankin—I would have no objection to a process which resulted in a variety which was tolerant to Roundup via the traditional method. As for your comments about plant breeding generally, yes, when you go the natural way, you have to, in a sense, back the horse into the stable. But that is the way we have been doing it as farmers for tens of thousands of years.

Dr WASHER—We have also been breeding human insulin via the pig for 30 years.

Mr Hankin—Yes. The interesting thing about insulin's pharmaceutical use is that—and, again, this is a report that simply came down the email—they are now using genetically modified human insulin. That is being introduced in Britain, but it has proved problematic with people suddenly developing a hypoglycaemic condition and no-one knowing why. It is a problem.

Dr WASHER—I certainly have not seen that report.

CHAIR—Do you have that report? Perhaps if you could make a note and supply us with that also.

Mr Hankin—Yes, I will just make a note of it and get it to you.

Mr NAIRN—What is the purpose of your organisation?

Mr Hankin—I have brought some brochures with me and I can distribute them.

Mr NAIRN—You have mentioned the rural and metropolitan breakup of your membership. What size membership is it?

Mr Hankin—We are quite small. We are 400.

Mr NAIRN—Australia wide?

Mr Hankin—Yes.

Mr NAIRN—Am I right in assuming that you have a bit of a problem with government spending taxpayers' money on information on this particular topic?

Mr Hankin—I would have no problem with the government spending taxpayers' money on this area of GE if it were part of an informed and unbiased information program.

Mr NAIRN—That is what it is designed to be.

Mr Hankin—When it was being mentioned this morning, it seemed to be in the context of—I was sitting at the back and may have missed some of the remarks—there being a lot of consumer resistance, fear and doubt out there about GE crops, and we have to manage that.

Mr NAIRN—I think the role of government is to ensure that there is some balance in the debate. You talked before about ethics and things. Currently, I would say that a lot of the debate could be classed as extremely unethical in many respects. For instance, there have been headlines like 'Frankenstein food'. Do you think that sort of thing helps in the debate in assisting people to understand what this is all about?

Mr Hankin—The story of Frankenstein is very popular. Companies like Monsanto, AgrEvo and Novartis left themselves open to this damaging campaign simply because they sought to introduce genetically engineered crops unmarked into the food chain. In fact, that has already happened in the United States.

Mr NAIRN—But that type of headline does not allow for an informed debate; it evokes certain emotions.

Mr Hankin—It certainly does.

Mr NAIRN—It can be quite scurrilous when considering the way that people might tend to interpret it at the end of the day. That is the problem.

Mr Hankin—I agree with you that this is a very emotional area. Frankly, the arguments that work best with the vast majority of people, who have little knowledge or understanding

of these issues, are those that have an emotional character. When Monsanto, Novartis and the other companies introduced this technology, the crops and the food into the food chain, they said, 'It is the same; it is substantially equivalent.' They leaned on government agencies worldwide to not restrict by saying there was substantial equivalence, and there was no examination or risk assessment.

Mr ADAMS—They did not want any changes on the label to identify it.

Mr Hankin—They did not want any changes. By pushing in this way, in a sense trying to slip this food and technology into the consumers' mouths without them knowing, they left themselves open to people responding by saying, 'Frankenstein's food.'

CHAIR—Do you also see it as being the role of your organisation to promote the benefits of non-genetically modified products?

Mr Hankin—I certainly do.

CHAIR—Thank you for providing us with this pamphlet. You talk about the heritage seed bank. Can you tell us a little more about that?

Mr Hankin—Certainly. As an organisation, we have been going seven years. We get sent genetic material, seeds, in the mail from people from all over Australia. Most of it gets passed out to other members to grow on. But at times there are no people available to pass it on to or it is in such sufficient quantities that we can store it, and we have a low temperature seed bank. In that seed bank at the moment there would be 1,600 to 1,700 varieties, all of them fairly rare in terms of being heritage varieties rather than modern commercial varieties.

Most modern farming varieties are commercial crop varieties, and your tomato is a classic example. I spent Friday at the Royal Melbourne Show, dropping a Safeway tomato from a certain height. The tomato would survive half an hour of dropping in my presentation because it is bred to travel 4,000 or 5,000 kilometres—but, of course, it is not bred for flavour.

Mr ADAMS—And those seeds are lost very quickly. With a commercial change in the market, farmers change over to another seed bank. Even local gardeners, I find, do not have much control. I am trying to buy old-fashioned mint in Tasmania. Somebody has control of that, and you cannot buy old-fashioned mint in a nursery at the moment. So I would imagine that there is a bit of marketing going on there.

CHAIR—I could give you a bit out of my backyard.

Mr ADAMS—I would not take it into Tasmania. We are very clean there.

Mr Hankin—Quarantine issues.

Mr ADAMS—It is very much like the old-fashioned chook. There are many varieties that we have nearly lost. That we have not done so, I think, is only through associations like yours that are in other ways building those varieties up. Your organisation has quite a strong

ethical view about this, and there has not been an ethical debate as yet. Would you like to comment on that? Does your organisation believe that there has been a debate about what is taking place as far as genetically modified food is concerned?

Mr Hankin—There really has not been a moral or ethical discussion within Australia—and this is rather like a private discussion between Bob Phelps and me. Although we come from different organisations, to some extent we work together. At times I have said to him, 'Look, you're speaking on behalf of the genetics network; surely ethics should be a key aspect of your part of the debate'—and it has not emerged as yet. But he has other fish to fry.

I would reiterate: there has not been a major debate about this issue, and there is very little detailed understanding of the scientific or the technological processes that go on when we develop genetically engineered crops or genetically engineered organisms. We are not talking about a crop; we are actually talking about genetically engineered living organisms. There is the old story put out by Disney—and you probably saw it when you were children—where the genie gets let out of the bottle. That metaphor holds true in this situation: if you are going to let the genie out of the bottle, you need to be very careful, firstly, that you can control it and, secondly, that it will be beneficial.

Mr ADAMS—I think it was the Prince of Wales who said that genetically modified food is 'Frankenstein's food', or it was he who reinforced that argument. People of the scientific community in Perth have given evidence to this committee. They told us that we should not believe anything on the label that says 'This is different food to others'. I found that to be a little self-interested and it was not helpful to a wider debate about this issue. So I am very pleased that there are organisations which will take it into a broader debate than the one put before this committee. Does your organisation believe that, from a consumer's point of view, there needs to be labelling differentiation with these products thereby enabling consumers to make decisions about whether or not to buy genetically modified food?

Mr Hankin—To be frank with you, I believe it is essential. Consumer choice and the right to know the nature of what you are eating is important. In time, once people understand what is being done in order to generate these foods—perhaps as a result of this information campaign—I think we will find an awful lot of them exhibiting a preference for non-GE foods.

I would like to throw something at you here. A couple of weeks ago I was listening to Robin Williams having a conversation on radio with Dr Adrienne Clarke, the former head of CSIRO. The discussion was about genetically engineered crops. He asked, 'What do you think will happen?' She said, 'Well, in the near or longer term future, the rich and committed will probably wind up buying organic, biodynamic or similar food articles; the less committed and the less well off will buy the non-GE modified stuff; and finally everyone else will buy the GE material.' She was talking about price differentials. She was speaking in the context of organic products being relatively expensive, GE-free material being middle range and genetically modified products being cheap.

I found that to be extremely arrogant because it implies that the poor will wind up with the third rate. That is one implicit assumption. But the other implicit assumption is that our

farmers will grow food that is third rate to sell to poorer world consumers. That is slightly nuts because to whom do we sell our export crops now? We sell them to Japan, Korea, Taiwan, Hong Kong and Western Europe. These countries are not poor. We sell our wheat to prosperous middle class Western countries who want what we have got.

Mr ADAMS—We have not received a lot of evidence to say that there is much in this for the farmer or the consumer. Certainly, people who are involved in the science side seem to want it, and the companies that are investing in it seem to want it.

CHAIR—The national farming organisation was very supportive.

Mr ADAMS—They were very supportive in that they see it being needed for us to keep up with the world. I think the world is still sorting itself out in that regard. Do you think there will be a divide? What is your experience with the information that is coming out of the United States? We have had a lot of evidence that the United States has embraced the changes there and that the consumer is buying genetically modified food, without any concern, and accepting the regulatory body's view. Therefore, it was said, the consumer is driving the change and has accepted the change. Do you have any other evidence on this?

Mr Hankin—I would suggest to you that that is not the case. It is true that genetically modified crops are in the American and Canadian food chain. It is also true that they are in there unlabelled. So consumers do not know what they have got. The one instance where a crop was introduced and promoted as being genetically modified was the 'flavour-saver tomato'. That was developed and marketed by Calgene, and Calgene went belly up because, effectively, that did not sell. The flavour-saver tomato was a tomato that was genetically modified so that it would be—

CHAIR—It did not taste too good, did it?

Mr Hankin—Yes, there were definite taste problems.

CHAIR—I think the consumers rejected it for taste rather than because they had a knowledge that it was genetically modified.

Mr Hankin—Certainly that was part of it. But there was also significant sentiment in the United States. This was in 1995, three or four years ago, and there was a boycott of this particular variety of genetically modified food by restaurateurs and chefs throughout the United States. That was an organised boycott.

Mr ADAMS—But do you have any evidence now that that is occurring? The evidence we have received is that it is not; that there has been an acceptance. Certainly there would be a percentage of people who would be opposed to it and perhaps not be buying. But you are saying that there has not been a specific labelling regime. The labelling regime of the United States does not say, 'This is genetically modified.' Do you know whether that is true or not?

Mr Hankin—It is hard to prove a negative. Those crops are in the food chain as canola, as soya beans and as corn. They are also in the processed downstream products: ice-cream,

bread, biscuits—you name it. In one sense, they are hard to avoid. But there is one way of assessing what is going on, and that is to assess, for example, what is happening to sales of the alternative which is guaranteed non-GE. That is the organic sustainable ag industry in the United States and Canada, and it is booming. Sale increases are of the order of 11 per cent per year for the last three years. But it is hard to prove a negative.

Dr WASHER—I would just ask about a couple of things. Antibiotic resistance, as you have mentioned, is an important issue. But of course that is in the gene of the plant. So its assimilation, as you say, into animal cells is not highly likely. I mean, it is not as if they contain antibiotics; it is in the genetic mechanism to be resistant. Also, from the medical point of view, there has been no evidence of transfer yet. So I make that statement just to clarify that point.

Another issue is that standard plant breeding alters genes and toxic substances have been produced by normal breeding. There was a potato some years ago that was highly toxic via natural breeding mechanisms. Therefore, it does not matter which way we do things because there is always a risk and you need to test and be sure.

Also, of all the food products which have been approved by the FDA for release onto the market, generally we have found none—let me repeat, none—that we can give evidence of there being a health risk in. That may not be true in the future—but currently, today. So we cannot really claim that these products are third rate. Also, we know that organically grown food has a much higher incidence, say, of the risk of food poisoning, depending a little on how it is organically grown.

I would also comment that herbicide resistance is transmitted rapidly under natural circumstances. If we use herbicides in our orchard, I can assure you that many weeds are herbicide resistant to the herbicides we have been using—and there has not been any genetic engineering there. This will just happen normally through nature. I agree that Bt resistance is a problem—and, as you would know, Monsanto is talking about putting in another Bt gene—but it is pretty specific for the Heliothis moth and will not kill bees and other insects. It is not general.

Mr Hankin—Any insect that has a caterpillar stage.

Dr WASHER—Yes. So there will be things that it is wanted for. But organic growers also have sprayed this on their crops for protection. So the resistance factor is there, whichever way it is done.

Mr Hankin—I would respond to that point specifically. Bt has been used for something like 30 to 40 years. It is a natural product, which is important. It is produced by a bacteria and is a natural by-product. It breaks down rapidly, within a day, particularly in sunlight. So, when you put it out, it breaks down quite rapidly.

Monsanto picked up this natural product and inserted it. The technical process deserves comment, but the interesting thing is that the plant produces 10 times more of it per centimetre than is normal in the organic spray formulation, and it does that continually because now it is in the genetic make-up. In other words, it is doing that 100 per cent of the

time at a 10 times higher concentration. Any insect that has a pupa/caterpillar stage is vulnerable to Bt. So, it hits any insect in that area that has a caterpillar stage, not just the Heliothis.

There has been no development of Bt resistance in 40 years—organic use of Bacillus thuringiensis—because, in a sense, it is used episodically and at lower concentrations. However, when you are using it continually because the plant is producing it continually, and at very, very high concentrations, resistance is inevitable.

Dr WASHER—I do not think we have yet created a chemical, be it produced naturally or sprayed on externally, that one day we will not meet a resistance in. But life goes on, and you have to keep moving right along, finding something different.

Mr Hankin—For organic farmers, it means that a pesticide management tool which was safe for humans and largely safe for other animals will, over time, become unavailable—and it will become unavailable because of the actions of a large corporation which saw dollars and cents in doing it this way.

Dr WASHER—Again, I would be interested in any figures you have to prove that; that is, because of high concentrations, resistance will be more probable. That would be interesting and it would be a good point, if it were the case.

Mr Hankin—I know of one instance where it developed over the three years of 1994-95-96 in Louisiana, USA. There was an SBS program broadcast approximately 18 months ago on which interviews were shown of farmers who were growing a variety of Monsanto corn. They were saying, 'The loopers are here anyway; they're resistant.' As a result of that, in our cotton growing districts, we have what are called 'refugia areas'. That is, a certain percentage of cotton—I think it is 12, 15 per cent—on each farm must be non-BT. But the level of policing of those refugia areas is fairly minimal.

Mr ADAMS—What is the exclusion of that 15 per cent for?

Mr Hankin—The idea is that, if there are areas of non-Bt cotton and the Heliothis, the insect which is a pest of cotton, is not killed in the non-Bt cotton areas, the development of resistance will be hampered, slowed down because there will be lots of survivors that do not have that resistance.

CHAIR—On the second page of your submission, you talk about insurance companies that are specifically refusing to provide coverage to corporations that are introducing genetically engineered technology. Can you give us some examples?

Mr Hankin—I cannot actually, because I do not have the details to hand. I could find them, but I do not have them at the moment. When farmers or any of us go to take out an insurance policy, the company will not sit with all the risk; it spreads the risk about. So you have what is called a reinsurance industry. Major Swiss reinsurance companies are declining to accept risk on genetically modified food crops.

Mr ADAMS—Underwriting.

Mr Hankin—Underwriting, yes. They are declining. They are saying, 'We don't know the risks involved; therefore, we can't assess whether we'll be subject to major losses or profit'—and, in the long term, they have to make a profit or they will not stay in business.

CHAIR—The whole question of regulation is central to this entire issue, whether we are looking at genetically modified organisms or non-genetically modified organisms, and the certification process within that. I am interested in this seed bank of yours. Can you tell us about the certification process for those seeds? You have described how people send you seeds and sometimes you cannot hand them on further to producers. So those seeds are held, and you have approximately 1,600 different varieties of them. Can you tell us about the certification process for those heritage seeds?

Mr Hankin—We do not use a certification process, as such. I am not sure what you mean in this context by 'certification process'.

CHAIR—I mean that, if someone sends a seed and says, 'This is a heritage seed for a particular crop,' how do you know it really is?

Mr Hankin—Effectively, you are referring to what we call a passport—the descriptive information and details of where it comes from, who has grown it and so forth. Many varieties that are within the seed bank have come from members of the ethnic communities who have arrived in Australia over the last 50 years. Regardless of AQIS and regulations to do with quarantine restrictions on plant varieties, many of those individuals have over time brought varieties into the country with them. These are varieties that might have arrived in the 1940s, 1950s or 1960s. Nowadays a lot of those varieties are not available in Europe because, in the sixties, the European Community introduced the scheme whereby varieties could only be sold if they were on the common list, and everything else was banned.

So Australia is now a repository—purely by fluke, I guess—of landrace materials from Western and Eastern Europe which, in fact, have effectively vanished from that part of the world now. That is a lot of the material.

CHAIR—Because this is a rare treasure-trove of seed that you have, wouldn't it be in your interest to have a proper testing process and certification?

Mr Hankin—It would be extremely good if, for example, we could do a PCR—a polymer chain reaction test—for every variety. That would be fantastic because we would then have some kind of scientific idea of the nature of its uniqueness. Given that at the moment it costs about $100 per PCR test, it is not feasible because we would be looking at a lot of money.

Mr ADAMS—Are there no universities or others interested in that?

Mr Hankin—Not so far, no. The focus within scientific research and university research in this area is very much in the agribusiness paradigm.

CHAIR—But, as you were saying, there is a niche market, and you are telling us that this niche market is increasing. I would have thought perhaps it would be timely for a tertiary research organisation to become interested.

You have provided us with a lot of information here today, and I am interested in how you obtain your information. You would have heard my asking a question of AFFA about the process whereby they share information. I wonder whether there are similar groups to yours in overseas countries and whether you share information with them. Just how do you get the information you are presenting to us?

Mr Hankin—The World Wide Web and the Net provide literally a global information network exchange. If one taps into them, one can contribute and receive. We are part of those networks through email and a web page. We also receive an extensive list of journals—20 to 30 publications.

CHAIR—But how are you able to check the information?

Mr Hankin—That is an extremely good question. Some of it, from either direction, is not very credible; some of it is. Take an interview with a plant scientist like Arpad Pushtai. He received a grant of £1.7 million from the British government to investigate genetically engineered potatoes and went into that process as a proponent. But he discovered that the rats were being adversely affected by the GE potatoes and the potato was already on the market. He went public and said, 'This is not good enough.' Thereafter, he was officially relieved from his position and then, a month or two later, was sacked.

CHAIR—Can someone like that publish the trials of their research?

Mr Hankin—Yes. We are not talking about a radical here; we are talking about a person who has been in British plant breeding science since the fifties.

Dr WASHER—Are you talking here about the lectins of potatoes?

Mr Hankin—Yes, the promoter lectins.

Dr WASHER—It was well known before he did this that, if you feed lectins to rats, they develop liver atrophy. But the potato containing that amount of lectins was not on the market.

Mr Hankin—I will provide the interview to the committee.

Dr WASHER—He withdrew that later and it was proved to be bad science.

Mr Hankin—I will provide the committee with that scientist's interview.

Dr WASHER—And the follow-up with what happened after.

Mr Hankin—It is a fairly recent interview.

Dr WASHER—I know the case well. He withdrew that inevitably, and there were highly toxic levels of lectins in there. That was never put into the marketplace as a food, nor was it approved.

Mr Hankin—GE potatoes are available in the United Kingdom.

Dr WASHER—Sure. But that particular potato containing that amount of lectins was never put on the market for human consumption.

Mr Hankin—There is one thing I would like to make a final comment about because it is something I have not spoken of at all. It relates to the loss of biodiversity. There is a relationship between the loss of biodiversity, agribusiness and genetic engineering.

If you take a corn or a canola, for example, and you seek to genetically modify it, normally the plant will be grown and the plant literally chopped up and sold as cultured. You have one plant, so you have one DNA sequence occurring. That has been, by one or two methods, genetically engineered. Effectively, in the genetic engineering process, although there might be a dozen or 50 or 100 where you get DNA take-up, you only have one line of DNA in corn, canola or soya beans which underlies your entire GE program—and that, to me, represents a pyramid that is inverted.

Mr ADAMS—So, one disease occurring in that line would wipe out the whole line.

Mr Hankin—Yes, it would wipe out that entire line.

Mr ADAMS—That occurs with cloning too.

Mr Hankin—Yes, that is right. The cells that take the DNA are then cultured as plants and then cloned on. So from one take, one cell where the DNA takes, two or three years down the track you might wind up with perhaps 50,000 acres.

Mr ADAMS—All from one.

Mr Hankin—All from one. That is identicality; that is not biodiversity. We are literally sitting the pyramid, the food chain, on its head.

Dr WASHER—But, to be fair, the breeders would use the best germplasm. With natural breeding programs, the best germplasm is selected before going to the cost of genetically engineering something, and that germplasm would be kept for rebreeding programs. Currently, usually you are engineering only one thing. You may need rust resistance, or a whole heap of other things that have not been genetically engineered. So you use the very best germplasm to do that. You will not use inferior seed stock or be reliant on one source of seed stock if you are going to spend that kind of money which, as you say, can amount to multiple millions.

Mr Hankin—Companies exist to make money, and they are noted for doing so—and I am not criticising that process. If they did not make money, they would go bust. Companies bred a corn variety in the United States in the early 1970s that was susceptible to a rust.

There was a 13 per cent loss in the southern US states in one year to that rust because, effectively, all the varieties were susceptible and all the varieties were developed from the one strain. Yes, they may use the best, but companies are also subject to cost pressures and the need to actually keep costs down.

Dr WASHER—But, generally, I do not know of any commercial company that would not use conventional breeding programs in association with genetic engineering. That makes sense. They are not going to get caught in the way you have outlined. That is an obvious trap. They do both; they get the best germplasm and keep good breeding programs and then select what they want to gene engineer.

Mr Hankin—All I would suggest is that, if you have a corn, a soya bean or whatever, there is an awful lot of biodiversity out there in the landrace material—an awful lot. The crops that have developed from that with conventional methods have narrowed that diversity considerably. GE crops, with the predictions that are being made, would narrow that biodiversity to a tiny fraction.

CHAIR—Mr Hankin, it was unfortunate that you could not appear before the committee when it was in Melbourne, so we thank you very much for coming such a long way to present your evidence here this morning. I call on Mr Adams to move that the document tendered by Mr Hankin, entitled 'Canadian farmers seek compensation for genetic pollution', be accepted as exhibit No. 4.

Mr ADAMS—I so move.

Resolved (on motion by **Mr Adams**):

That, pursuant to the power conferred by section A of standing order No. 346, this committee authorises publication of the evidence given before it at public hearing this day.

Committee adjourned at 12.15 p.m.