

**STANDING COMMITTEE ON
ENVIRONMENT AND PUBLIC AFFAIRS**

**GENE TECHNOLOGY BILL 2001 AND
GENE TECHNOLOGY AMENDMENT BILL 2001**

**TRANSCRIPT OF EVIDENCE
TAKEN AT PERTH
THURSDAY, 21 NOVEMBER 2002**

FIRST SESSION

Members

**Hon Christine Sharp (Chairman)
Hon Kate Doust (Deputy Chairman)
Hon Jim Scott
Hon Louise Pratt
Hon Frank Hough
Hon Robyn McSweeney
Hon Bruce Donaldson**

Committee met at 1.11 pm

EDWARDS, DR IAN,
Chief Executive Officer,
Grain Biotech Australia Pty Ltd,
examined:

The CHAIRMAN: Welcome to this committee hearing.

Dr Edwards: Thank you. I am here as chief executive officer of Grain Biotech Australia Pty Ltd and to represent the views of its board of directors.

The CHAIRMAN: Thank you. You have signed a document entitled "Information for Witnesses". Have you read and did you understand the document?

Dr Edwards: Yes, I did.

The CHAIRMAN: These proceedings are being recorded by Hansard. A transcript of your evidence will be provided to you in a few days. To assist the committee and Hansard, please identify any document from which you quote. Please also be aware of the microphones and use them effectively. Once your transcript has been finalised, it will become a matter for the public record. If you wish to present some evidence to the committee in private, you have the right to request a closed session, and we will consider your request at that time. Until the transcript has been finalised, it should not be made public. Premature publication or disclosure of public evidence may constitute a contempt of Parliament, and the material thus published may not be subject to the protection of parliamentary privilege. Would you like to make an opening statement?

Dr Edwards: Thank you, Madam Chairman and members of the committee. I have offered for circulation an opening statement, to which I will speak. I respect your time and will keep my opening statement within 10 minutes. After that, you will presumably ask me a number of questions. I thank you all for this opportunity to provide this testimony to the committee on matters that I think will have a profound affect on not only the competitiveness of agriculture in Western Australia but also the livelihood of Western Australian grain producers. I serve as chief executive officer of Grain Biotech Australia, which is a predominantly grower-funded company. It is a Western Australian wheat breeding company, which has a national focus and also some international linkages. The company was founded four years ago on a clear vision. It was actually the first wheat company in Western Australia to fully integrate the tools of molecular biology with a world-class wheat breeding operation. Our goal is to deliver both conventional and genetically modified varieties for Australian agriculture. We expect those varieties to add value.

I have spent 37 years in genetic research worldwide. From 1999 to 2001 I served on BIOCOG, the Biotechnology Consultative Group, which advised the federal Government on the national biotechnology strategy. In Western Australia I served on the technology industry advisory committee. Our goal at that time was to examine current shortfalls in our biotechnology industry and also look for possible synergies in which we might do a better job as a State. Our committee at that time included Dr Sue Meek, who now serves as the Gene Technology Regulator.

To be fair, our company has a vested interest in the success of transgenic plants. Our investors are predominantly wheat producers who wish to see Australia at the cutting edge of new technologies that will keep our country competitive, reduce pesticide use, be safe for the environment, improve profitability, and provide benefits for consumers.

I will make a few points clear at the start. Grain Biotech Australia is a small Australian company that has no multinational ownership. Our current wheat varieties and most future products will be

non-GM. We use transgenic methods only in those instances in which problems cannot be readily overcome by conventional means. I will cite a couple of examples later. It is important that we state that the regulatory system in Australia is now so burdensome, particularly on small companies and public institutions, that in reality very few GM products are likely to be deployed in a cost-effective manner in our country.

I will provide a brief synopsis of GM crops worldwide today. Since commercialisation began in 1996, GM crops have been rapidly adopted. There has been a 30-fold increase around the world, with 52.6 million hectares grown by 5.5 million farmers in 13 countries in 2001. This constituted four per cent of the world's land surface. Despite consumer concerns in some markets - notably Europe - GM crops increased 19 per cent between 2000 and 2001, obviously with the United States, Argentina, Canada and China leading the way, and nine other countries increasing their acreage. Dominant GM crops have been soya beans and corn, which are not of great relevance to Australia, and cotton and canola, which most certainly are. It should be noted that 90 per cent of Canadian canola farmers voluntarily elected to pay the technology licensing fee this year and grow GM canola. They did not do that out of any love for the multinational company concerned, but because it was profitable. Canada currently outsells Australia by a factor of five to one in the key Japanese market, with no price penalties for GM. The Japanese understand that since oil contains no protein, with Roundup Ready or herbicide resistant canola it makes no difference whether the oil comes from a GM or non-GM plant - it is all non-GM. However, I make it clear that the meal derived from GM canola and fed to animals would be GM. In Canada GM and non-GM are not segregated. In fact, they are mingled in the marketplace. This should be noted particularly with regard to the success of Canada's international marketing.

The report of the Australian Productivity Commission, the draft of which came out in October this year, summarised a large number of studies. There have been conflicting and varying viewpoints. The Productivity Commission looked at a large body of evidence in pulling this information together. Its overall conclusion was that there were productivity gains of 7.5 per cent on GM grains and about six per cent on GM oil seeds, aside from greater worker safety through a marked reduction in insecticide sprays for cotton, the avoidance of blanket insect sprays that were applied for corn borer before insect resistant maize came onto the market, and greater flexibility for growers to time wheat control, so that they can perhaps have a summer vacation and improve their quality of life. That is a bit of background.

I will make a few points on food safety and consumer acceptance issues, because they are pertinent. We must responsibly consider what is released and when it is released in Australia, and particularly whether it can be sold. Studies by the National Academy of Sciences in the United States and other countries, notably the OECD countries, the Food and Agriculture Organisation, the World Health Organisation and numerous international agencies have shown that GM food is at least as safe as the food produced by conventional technologies. It has been tempting to suggest that the United States has a rather cavalier attitude to GM products, but in fact its regulatory process has nine steps. It takes seven to 10 years to navigate the regulatory waters in the US. Three government agencies - the United States Department of Agriculture, the United States Environmental Protection Agency and the Food and Drug Administration - are involved, which is comparable with the situation in Australia.

There are no reported incidents in which DNA has been shown to be toxic. Despite fears and claims to the contrary, there are also no known instances of plant-derived DNA being taken up and incorporated into the mammalian genome. There is no such thing as zero risk in our food supply. Some of the most common foods in our diet can cause allergies, notably corn or maize, eggs, soy, rice, wheat, brazil nuts, peanuts, seafood, crustaceans and milk. I could go on, but they are some examples. Zero tolerance and absolute safety is a myth. The issue comes down to consumer acceptance and our capacity to market GM products. I have made a pledge to the investors of our company that we will not release GM wheat in Australia until we know that we can sell it. Most of

the current European legislation is based not on science but a response to consumer fears. They know that. An example is the rejection of canola oil derived from GM plants that happen to be herbicide tolerant. Although GM canola can be traded in most markets, this is not the case with wheat. However, we believe that this will change significantly over the next five to 10 years, and ironically India and China could lead the way as products of more direct consumer benefit enter the market. One example my company has produced in wheat is a powerful anti-oxidant that will be good for human health and nutrition. We feel that had this been the case from the start, there might have been greater acceptance of what we do.

I am here today to voice the following concerns. Firstly, any attempts to have areas designated under the law of Western Australia for GM and non-GM is a fundamental denial of the rights of growers to use technology that will improve their livelihoods. It is also a flagrant denial of freedom of choice. These moves are currently being driven by canola, but obviously GM free zones will include all crops, including wheat. A recent study by Dr Mary Reiger from the Cooperative Research Centre for Australian Weed Management has shown that large buffer zones between GM and non-GM canola crops may be unnecessary. These studies show that the incidence of adventitious presence of GM canola in non-GM crops is so low that non-GM canola is in no danger of being excluded from any markets, including European markets. There is even less pollen transmission in wheat, which is a highly self-pollinated crop. Implementation of GM free zones within Western Australia would be neither equitable nor commercially feasible. They are not practical in an operational sense. We consider them inappropriate. Our company is currently engaged in trials of GM salt tolerance in wheat, using a plant gene that has the potential to allow wheat to grow in salinity equal to 30 or 40 per cent the concentration of seawater. Western Australia currently has 4.5 million hectares of salted land. This area will double by 2050. I hardly need further emphasise the implications of our work. We feel that we can make a tremendous contribution to the State. We are very excited about it. Do you propose to tell a farmer in five to eight years from now that he cannot grow our salt-tolerant wheat variety because his farm happens to reside in a GM free zone? How do you propose to compensate him? I believe that our growers will make their opinions abundantly clear on this matter. We have yet to receive clarification from the Office of the Gene Technology Regulator on how costs are to be recovered after 1 July 2003. I requested this information in September last year, but to date have not received the courtesy of a reply. This lack of clarification has led us to make plans to market our first two technologies outside Australia. Are we starting to see a repeat of the information technology industry? One cannot run a business under the current regime of uncertainty and endless consultations. The Gene Technology Bill 2001 and its amendment also refer to an annual licence charge. I readily acknowledge that this matter requires clarification, but any implementation of a tax in Western Australia over and above the national regulatory fees will guarantee one thing - businesses will relocate. Perhaps this will achieve the goal of the anti-science lobby. We believe that Western Australia deserves better than that. Those are my opening remarks. I would be glad to answer any questions.

The CHAIRMAN: Thank you. I will ask a couple of questions to seek clarification and additional information on points you have raised before I throw it open to other members. You said that most of your future products would not use transgenic methods and that you use those technologies only to overcome particular problems that cannot be overcome by conventional methodologies. You were going to provide some examples of that. Could you give us a practical, hands-on understanding of that?

Dr Edwards: For many years we have looked to the wild relatives of wheat for sources of salt tolerance. Some of those wild species grow fairly well under more saline conditions. Studies have been under way for more than 30 years in California, and some excellent studies have been conducted in South Africa and at the John Innes Institute in England. To date we have not found anything that would give us the level of salt tolerance that we need. We have looked carefully at

the range of genetic variability. Seawater is 540 millimoles. In wheat the variation is between 50 and 90. What we call more tolerant is very narrow. However, a gene from a wild species of canola that has been put into tomatoes has shown that those tomatoes can grow in 40 per cent of the concentration of seawater. This is an example of where a GM technology is far more powerful than existing resources that are under our control. Another example we are working on is sprout tolerance. There are some real advantages in Australia in marketing white wheat. However, white wheat is far more susceptible to sprouting than red wheat, which is produced by the Americans, Canadians and other competitors.

[1.30 pm]

However, this is an example of some genes that have been encountered that could provide that measure of tolerance. There are a couple. In the novel products arena, I think I gave you the example of the anti-oxidant that we have now put into wheat. As a company, we would like to come to market with something that is good for the consumer and is not perceived as making another multinational company more prosperous.

The CHAIRMAN: Following on from your research on salt tolerance, I note that on the last page of your submission you ask whether we propose to tell a farmer in five to eight years from now that he cannot grow such varieties. Are they, by inference, the kinds of time frames it will take you to develop this product?

Dr Edwards: Yes. When we look at the regulatory time frame, wheat would be ready for field testing one year from now, but there is no way that it could ever see market inside a minimum of five years, assuming we can show great safety of the product. The greater likelihood is that it could be eight years. Currently, we have wheat growing in salt water in containment in the glasshouse. That is quite an exciting start. We hope to be able to prove that under field testing, if we can afford the cost of a field test permit.

The CHAIRMAN: Is it the view of Grain BioTech Australia that the regulatory process discriminates against smaller Australian research companies?

Dr Edwards: Absolutely. It goes without saying that our resources are limited. We do not have the resources of a multinational company to cover the extensive costs that are incurred. We take the position that if it is considered to be in the public benefit that there be a clear and transparent regulatory process, the public should pay, just as it does in a lot of other arenas. However, when government talks about full cost recovery in a department that has already created 60 employees and is growing, as a businessman I get nervous. These are some of the very real concerns. If it were to come about that only three of us applied for some of these permits in a particular year, and full cost recovery were allocated, assuming they went about it in this matter - I do not want to prejudge - the implications would be horrific. We have had to think about what it means to our company strategically. Sadly, it would mean that we would have to go to DuPont, Monsanto, BASF or another multinational company and ask it to help us get our technology to market because we cannot afford it. That is a shame, because the founders of our company passionately believe that there should be an Australian alternative to what we have seen in the gene technology arena around the world and that there should be an opportunity for not only ourselves but also other small companies, which universities will spawn and grow and which, we hope, will become the nucleus of a vibrant industry, to have a chance to succeed without such prohibitive cost recovery.

The CHAIRMAN: On another point of clarification, you said that you wrote to the Office of the Gene Technology Regulator last year about cost recovery issues but it has not yet responded. Have you had an acknowledgment of your correspondence ?

Dr Edwards: Yes. The office acknowledged it and said that it would get back to us. In fairness, in September last year it was so new in formation that Dr Sue Meek had not been appointed to her position; the interim office was operational at the time. However, we received the assurance that as

soon as it was in a position to respond or provide further clarification, it would provide it. I should not give the impression that the correspondence was totally ignored. However, we have no indication about what full cost recovery will mean. As you can imagine, we cannot budget. In fact, when we try to outline the costs and the benefits to a potential investor in our company, we have to look a little foolish and say that we do not know. That is the honest truth of where we sit today.

Hon FRANK HOUGH: In the first paragraph of your submission you said that you founded your company with a clear vision. Then you referred to both conventional and transgenic or GM products. On the next three pages of your submission, you continued with a very strong spin doctor push on GM products and not conventional products.

Dr Edwards: I will be glad to respond to that. The pending question is the Gene Technology Bill 2001 and its amendment, not conventional wheat breeding.

Hon FRANK HOUGH: You founded your company four years ago. Is it a listed company ?

Dr Edwards: No.

Hon FRANK HOUGH: Will it list?

Dr Edwards: Our board has thought about this, but we do not have any intention to list at this time. We are a privately held company.

Hon FRANK HOUGH: It will be a matter of time before Monsanto moves in and wants to buy the business. You are testing salt-tolerant wheat. In a speech I made last week or the week before, I said that growers in China are producing it. Why are you testing it here? Why would you not borrow some of the salt-tolerant wheat from China ?

Dr Edwards: My response is that if we were convinced that they really had something of value, we would be in contact.

Hon BRUCE DONALDSON: You said that this year 90 per cent of Canadian canola farmers voluntarily elected to pay the technology licensing fee and grow GM canola. What is the cost of that fee to an individual farmer?

Dr Edwards: I am not sure exactly. I think that is negotiated between the supplier, Monsanto and the growers. However, I did call the Canola Council of Canada, and Dr Keith Downey, who in fact invented the word “canola” and is the father of that product, has said that the only reason they are growing it is that they are making more money than the cost of the technology licensing fee. I regret that I cannot give you an exact figure.

Hon BRUCE DONALDSON: We may be able to track down that information. If they are paying a considerable amount to the main supplier, they must be getting some results, otherwise they would not be willing to pay it.

Dr Edwards: Yes. There is a saying among farmers: “Fool me once, shame on you; fool me twice, shame on me.” I do not think our Canadian canola farmers are so naive as to continue making a contribution to Monsanto. It is highly profitable; in fact, that is the reason they are continuing. Another issue in the prairies is conservation tillage. The ability to control weeds and prevent the kinds of dust problems that can occur in the prairies by the use of Roundup has been very beneficial to them. They perceive some additional benefits quite apart from the crop. Dr Downey has said that generally the quality and cleanliness of the Canadian product has been excellent and basically weed free.

Hon BRUCE DONALDSON: You referred to the oil from herbicide-tolerant canola and said that there is no difference in the oil because there is no protein in it. However, you mentioned the meal that comes from it. What is the difference between a DNA profile of the herbicide-resistant canola and that of traditional canola? I ask that question because there must be something there, because the meal was used in some of the salmon farms in Norway. You may have read in the paper about six to nine months ago that some shipments of salmon that went to Europe were rejected by the

consumers because the meal and a percentage of the oil had altered the flavour of the salmon flesh. Have DNA profile comparisons been done? What difference is there between the two ?

Dr Edwards: To give you a perspective - forgive me for using a wheat example - if six of us were to stretch out our arms as wide as we could, we would reach across the room. The thickness of the piece of DNA inserted is the edge of my business card. That gives you a slight perspective when we start to talk about the quantity that has come in. You can definitely detect the presence of GM in the meal once the oil has been crushed and extracted. As to how or why there is the perception of a different flavour, I do not know. I cannot see any logical reason that the gene that affects herbicide tolerance would somehow be linked to a flavour gene. That would be an extremely unusual occurrence. However, in the eyes of consumers, perception is reality. I would ask only: did someone get wind of the fact that it was a GM consignment?

Hon BRUCE DONALDSON: They did not say that it was GM. Apparently it was part of the replacement of fish oil in what they feed the salmon. They used a percentage of canola oil and some meal, which moved away from the traditional diet of the salmon. I am not saying that this was because it was a GM product. That is why I asked whether there was any difference between the two.

Dr Edwards: There would be no difference between whether it is GM or non-GM in that regard. However, we know that different diets - whether it is grain-fed cattle versus range-fed cattle or chickens that are range fed versus those that are force fed in a battery - can result in some very significant taste differences that consumers can detect. In response to your question, it is more a change in the diet rather than whether it is GM. It is very unlikely. In biological systems you can never use the word "never", but it is extremely unlikely that there would be a linkage between a gene that has its mode of action in stopping the work of a herbicide and a food flavour gene. That would be an extremely unusual occurrence.

Hon BRUCE DONALDSON: The introduction of vitamin A in rice has resulted in a product called golden rice. How far has that advanced? Is it proceeding in Australia or has the gene been introduced only overseas?

Dr Edwards: Not in Australia, but it is certainly proceeding in India at this time. Golden rice is going ahead. Interestingly, in Switzerland Dr Potrykus had to go to some 40 holders of intellectual property - it was quite complex - and get clearance, which he did, so that it would be made available for the developing world to feed the hungry. It has been a classic case of some good being done in that regard. However, there is no golden rice on the market today. Although it received a lot of early publicity, the hard work is just starting. People may be poor, but they know the taste of the rice they like. The work has just begun in India. There probably is quite a long way to go before golden rice becomes a reality. Very often we tend to hear the sizzle being sold before the steak arrives on the scene.

Hon JIM SCOTT: Following on from the issue of flavour change, is it not possible for a single gene to create an expression of more than one trait at any one time or affect its placement within the gene stream?

Dr Edwards: Yes, that is a fair comment. A good example of that would be white wheat, which I referred to earlier. In fact, the absence of any of the colour genes 1, 2 and 3 that lead to light, medium or dark red gives wheat a white colour. However, it also predisposes it to pre-harvest sprouting, so it is not unheard of.

Hon JIM SCOTT: In your submission you asked whether we should prevent a farmer living in a saline area from growing saline-resistant wheat. Would it not be the case that if a farmer were in a saline area, he would be better growing deep-rooted plants than wheat, otherwise the water table would continue to rise and the problem would get worse if he kept planting cereal crops?

Dr Edwards: That is a fair comment. It will take a multi-pronged approach to solve the salinity problem, not the least of which will be ditching and drainage. Wheat will not solve the salinity problem, but wheat could enable a farmer in a saline area to make a livelihood, and that is the fundamental difference. Another important point is that there are various ways that we can develop this wheat. One is called exclusion, in which salt simply cannot get into the plant; it stays in the soil. That does not solve anything. The gene we use does what we call sequestration; it stores salt in the vacuole of the plant. In fact, by the destruction or removal of the crop, salt is actually being removed.

Hon JIM SCOTT: Does that change the salt at all? Does it make the food salty ?

Dr Edwards: No. Sodium chloride is sodium chloride; it will not be transmitted into the grain at all. In fact, our ability to pick up different contents of sodium in wheat grain has been minimal.

[1.45 pm]

Hon LOUISE PRATT: You have asserted in your submission that GM-free zones are not equitable or commercially feasible, and that you place quite a lot of weight on the work of Dr Mary Reiger, who says that perhaps that is unnecessary, and that a GM crop and a non-GM crop could be grown quite close together. In the instance that there was contamination of a non-GM farmer's crop, given that you have asserted that regulation is unnecessary, what would you say about the protection of the non-GM market, and that farmer's commercial interests?

Dr Edwards: Dr John Hamblin has put out a position paper on GM-free zones. I understand he will be appearing before the committee later today. He has calculated the frequency and a worst-case scenario. I will give the bottom line rather than the screed of data. The total amount of GM that would appear in 100 tons of canola, in a worst-case scenario, would be 0.012 per cent. As you know, Japan currently has a requirement that concentrations below 5 per cent be considered non-GM. Most other countries have a one per cent threshold, so if we are at 0.01 per cent, I will not say it could never occur, I would say that the chances of contamination are minimal.

Hon LOUISE PRATT: What happens if it is not just a matter of contamination, but when a perception of contamination affects someone's access to a market?

Dr Edwards: We will have to cross that bridge when we come to it. For example, at the meeting of Seed Industry Association of Australia, of which I am a member, the issue was raised of an organic canola producer being quite concerned about contamination. Someone asked the question "can you name one organic canola producer in Western Australia?" I am not saying that there is none, but nobody was able to name that case.

Hon LOUISE PRATT: Perhaps it is more likely to be wheat, in terms of perceptions about market, because wheat is not normally used as an oil product?

Dr Edwards: Wheat is a good example. It is the heart and soul of our food supply. Compared to canola, wheat is highly self-pollinated. In fact, the pollen dehisces within the blooms of the seed head. I have spent many years of my life trying to produce hybrid wheat, in which we had to select for types of wheat that extrude their anthers and produced pollen. When we tried to produce that seed - even growing it in close strips about 12 feet wide at the time - we had a tremendous problem in the middle of the strip, because as you got away from that pollen in the male parent, the seed production was so low that hybrid wheat has not been economically successful. Pollen can still be blown, but the potential for infection in the case of wheat would be significantly less even than canola. Insects help with the transmission of pollen in canola.

Hon JIM SCOTT: Contamination does not of course come only from pollen; it can come from seed. With something like canola, with such a small seed, and with the transport we have around the state, and the varying quality of the bins, it is fairly obvious that much of the seed is spilt along the sides of the roads. In Canada, for instance, some of the canola has multi-tolerance; this gets into natural systems. Some of the sides of roads are not quite natural any more, but there are certainly

areas where they could be natural. In those places, there will be weeds that cannot be removed, except by fire, which they would also tend to help promote. Do you see problems with this multi-herbicide tolerance arising here?

Dr Edwards: I will begin by saying something in support of what you say. You will be aware that Roundup-ready wheat is being produced in the United States and Canada. That is about the last thing we want, and we have no interest in it as a company, because we are actually pursuing a non-GM alternative. If the same gene for resistance were to be put into multiple crops, the problems of weeds would be quite significant. Fortunately, in the case of wheat, we have a much wider array of herbicides that can be used to control weeds. It would not be a significant problem. We certainly do not rely on Roundup to grow a crop of wheat. Similarly with canola, although an increasing number of herbicides are becoming available, it does not have as wide a range as wheat.

To get down to the side of the road issues, I would hope that our canola producers are not shovelling their seed from the wayside and putting it in their planters in order to grow a crop. I certainly hope that a person who wishes to plant non-GM canola would take very good care of where he harvests the seed that will be used for his subsequent year's crop, and how he bins it. It is basically an aspect of care. If it is a question of controlling roadside ditches where they do not want to use Roundup, there are other alternatives for that. We all know that a Canadian court found, in the case of alleged roadside canola getting into a person's crop that that was stretching the balance of credibility considerably.

Hon BRUCE DONALDSON: I refer to intellectual property rights. Say you were to breed a species of wheat with a very good tolerance to salt. How do you get on with the intellectual property rights? Do you believe in terminator genes being introduced into a species to protect intellectual property rights, so that you became the only marketer of that seed?

Dr Edwards: Terminator technology was developed by the United States Department of Agriculture. At one time it appeared that Monsanto would acquire it. It has never actually been utilised in agriculture, in any commercial crop to this day. Monsanto has further stated that it has no intention of using it. My worry with wheat is that wheat is a food product in so many developing countries. So often one not only must put out food aid; one must also put out seed aid. I find it morally indefensible, under those circumstances, to have a terminator technology. I acknowledge that, with certain products, it could be that, in order to protect rights, terminator technology would be necessary. Say there was a very valuable pharmaceutical crop that had to be very carefully controlled, and could be quite dangerous if it got into the wrong hands. In that case a terminator technology could be a very good way. However, I have a real problem using it in a basic food crop, so important around the world.

We have a great game on intellectual property, because to be able to combat the multinationals, we have had to be quite inventive in our company. First of all, Syngenta had a very nasty patent on the stage at which the gene could be put into the embryo. We found a way to circumvent that. DuPont has a patent on a gun, but fortunately we have a thing called Aussie gun, which is our way of using particle gun bombardment to put the gene in without having to go to DuPont. We have, however, had to negotiate the use of a selectable marker that is really safe. We are looking at a very benign sugar selection system which should be extremely safe. Regrettably, with that, we do have to sit down and talk. In respecting intellectual property rights, in some cases we can get by and do it ourselves. I should also mention that we have also filed three patents in the short space of three and a half years in which we have been operating, and we can now sit down at the table with Mr and Ms Multinational and say "we have something to trade off here; we need your selection system, but how would you like a virus resistance gene, which we have?" This is part of the game with intellectual property. If you want to play in that field you must be willing to acknowledge it, respect and also combat it, by being inventive. The thing that encourages me is that, over the course of time, a lot of innovation has come from small companies. One of the committee members

very rightly said that often those are acquired by the multinational, as was the case of Calgene, which invented the flavour saver tomato, and was bought out by Monsanto. This is why my board right now is of a mind to keep us private, because we would like an Australian alternative.

Hon KATE DOUST: If you had the opportunity to propose amendments to this Bill, what would they be?

Dr Edwards: One thing I would proposed is that there not be GM and non-GM zones, for the reasons I have stated. I would recommend that there not be additional taxes, or licence fees over and above the very cumbersome federal fees that we have at present. Those would be the principal amendments I would propose. I am not against the notion of very stringent gene technology regulation, because it is the best way to overcome people with separate agendas - and I say that as distinct from consumers who simply would like to know more. There are special agendas out there, and to be able to get by that, we need to have an open, transparent and very thorough regulatory system, as is the case in the United States, by the way. It is to the benefit of all of us that we do that. I mentioned the issue of full cost recovery. I am opposed to that, but that is a federal matter.

Hon JIM SCOTT: I note that you have a point in your submission saying that the Gene Technology Bill and its amendments referred to an annual licence charge. It goes on to say that, while this matter requires clarification, any implementation of a tax in Western Australia over and above the national regulatory fee will guarantee that business will relocate elsewhere, and perhaps this will achieve the goal of the anti-science lobby. You say you believe that Western Australia deserves better than that. Do you consider that all the people who do not want to see GM technology brought into this State are an anti-science lobby, or do you think that there are other people who have reasonable concerns, along with the thousands of scientists around the world who also have concerns, and probably do not share your viewpoint.

Dr Edwards: Your point is well made, and fairly taken. It has, however, been interesting to note that the founder member of Greenpeace, Dr Patrick Moore, in fact resigned from Greenpeace. This represents the anti-science lobby. They are the same group who paraded a Canadian farmer around various parts of Australia, who was actually convicted felon in a Canadian court, and whose case was rejected on appeal. Dr Moore says that genetic modification can reduce the chemical load, the impact on target species, and the amount of land required for food crops. He came out very strongly, and he feels that the campaign of fear now being waged against genetic modification is based largely on fantasy, and a complete lack of respect for science and logic. When we talk about anti-science lobbies, we cannot say that everybody who opposes is anti-science, but there is no doubt that the groups that have led to such draconian legislation have added an enormous burden of costs to those of us in the genetic supply industry, and trying to produce new products.

Hon JIM SCOTT: I suppose that you are aware that Dr Patrick Moore has also been a consultant to the timber industry, saying that clear-felling of jarrah forest is not a problem and that it is anti-science to say that it is, because other trees can be clear-felled and it is not a problem.

Dr Edwards: Yes, in the same way that the person in England, a man of nobility who was convicted for destroying GM crops of canola, subsequently became a consultant to a supermarket chain that specialises in organic food. I think we can counter a whole lot of those issues.

[2.00 pm]

Hon JIM SCOTT: I am merely saying that Dr Moore tends to talk about things outside his sphere sometimes.

Dr Edwards: As does Greenpeace.

The CHAIRMAN: Getting to the crux of what you are saying, you referred to draconian legislation to regulate gene technology. Do you then not have a view of ways to streamline the regulatory system that will be imposed through the legislation?

Dr Edwards: One of my concerns is that we must give this technology a chance to start. However, there will be real problems with the current penalty of up to 10 years imprisonment for failure to comply with an aspect of the federal Gene Technology Act - people get less for murder. That is what I mean by draconian legislation. I think those penalties have been put in place to allay the concerns of various constituencies. The legislation should be given a chance to work. Five years from now we will find that the world has moved on; the acreage of GM crops will have doubled; there will be more than 100 million acres of GM crops around the world; India and China will be moving forward at warp speed; and, quite honestly, we will be asking whether Australia missed something, rather like we did in the information technology arena.

Hon FRANK HOUGH: Was the fellow you referred to as a convicted felon Percy Schmeiser?

Dr Edwards: Yes, Mr Schmeiser was convicted in a Canadian court of law of theft of intellectual property.

The CHAIRMAN: That is it for today. We are slightly over time. Thank you very much for your input. I am sure the committee will find it most interesting.