

2003 AGM - Information forum part 3

Transcript of 2003 AWI Annual General Meeting

Information forum - Dr Nathan Ly - Textile Technology

Kevin Bell:

Okay. We'll move on now to the next stage of the wool fibre as it leaves the farm into that long, nebulous chain that we call off-farm fibre technology and it's an area that might be a little bit more foreign to us but I know most woolgrowers are pretty interested in it and I'd like to introduce Nathan Ly, who's the program manager for this other very important area of research into wool. If Australia doesn't do this research, no one will and, just like what you've heard from Paul, we need it and I'm very happy to introduce to you Nathan Ly. Thank you, Nathan.

Nathan Ly:

Thank you, Mr Chairman, for the introduction. Good morning, ladies and gentlemen. It's a pleasure for me to be here today to report to you progress of our activity in the textile technology department for the last 12 months.

The wool production and processing pipeline is rather long, as you all know, and wool is not really sold until the garment is sold to the consumer at the shop. My presentation today will focus on how AWI can deliver innovative wool products to the consumer in Australia and overseas. We do this in two ways: through product and process improvements to consolidate existing market for wool and secondly, through novel product and lateral application to extend the new market for wool.

In [several inaudible words] it is critical that we develop projects of relevance to the industry and our preferred arrangement is to form a three-way relationship where we, AWI as the funding party, will fund the science partner to do the research work. At the same time, the commercial partner is involved in the project at the early stage of the project so that they can help to focus on the outcome to the need of the end-user, rather than to the aspirations of the scientist alone. A potentially quicker way to the market might be through funding the commercial partner directly and then commissioning the science partner to provide assistance to the commercial partner.

For the financial year 2002/2003, I am pleased to report the following initiatives in our program. The collaboration between key science organisations who have been working in isolation has been a major breakthrough. We now have scientists from research organisations - like the CSIRO in Australia, Canesis in New Zealand and the German Wool Research Institute are now working together to solve wool problems for the industry and the first collaborative meeting was held in Germany just two months ago.

We have set up a China/Australia innovation network involving five key companies in universities in China. Its aim is to capture the potential and the innovation from a new generation of Chinese scientists. At the same time to help the Chinese universities to build up their wool education programs and through this initiative, we have so far received 28 research proposals from these organisations. Some of them are very interesting. For example, we got one proposal on blending the wool fibre with the bamboo fibre, one fibre that we don't have much knowledge about, or another proposal in developing wool uniforms for the Peoples' Liberation Army, wool uniforms for 20 million soldiers. You can imagine the consequences of that if that if that project is successful.

Thirdly, we have commissioned an independent evaluation of our whole textile technology portfolio and it is estimated over the 20-year payback period that the textile technology portfolio will deliver \$5.60 to the woolgrowers for every \$1 invested.

Finally, to assist with the research provider to focus projects suitable for industry, we have developed a strategy and priority for the textile technology area in conjunction with an industry advisory panel in Australia and we are now in the process of consulting with the companies overseas involved in the textile processing area: companies in China, India, Italy, Germany, the UK and so on. It's an active process that we are continually seeking feedback from industry so that it can help us to focus our strategy to their needs.

Our textile technology portfolio is divided into eight programs, as you can see on this slide here, and the pie chart will show you a breakdown of each program, and you can see on this slide here, the biggest slice is of novel wool-using products, where it is almost a share of 35% of our total budget. Next to it is the revolutionary wool direction, and then fundamental wool science, and then technology and training. I will focus on some of these programs in the next few slides but to give you a total overview, we are now funding a total of 95 projects. We are assessing another 109 project proposals and our budget for 2003/2004 is \$32.5 million.

Let us start with our most significant program - the novel wool-using products for new markets. The aim here is to develop innovative wool fabric for both apparel and non-apparel products. We've got a total of 32 projects and a total investment of \$13.7 million. A good example of that is a non-woven wool product that some of you probably have seen or heard the advertisements about. Wool product non-woven fabric is attractive because it is by the process of manufacturing the non-woven fabric [that it] would bypass spinning and weaving, so you end up with a woven fabric at a more competitive price, more competitive cost - so that it can usually compete with a synthetic fabric.

The first non-woven plant in the world dedicated to producing wool fabric was announced last year at Albury with Macquarie Textiles in a joint venture with AWI, and Drizabone is now selling the non-woven vest that you see up here in all their stores. But the application of non-woven fabric is not just limited to apparel. As you can see in this slide here, we are trying new non-apparel applications, the likes of shoes, handbags, blankets and insulation material as well. Imagine an electric blanket with no wiring yet it can generate heat so that you can use it to cover

your body or as underlay. This is the objective in our working with Canesis in New Zealand and a patent has been filed. It is an exciting development because the potential application [several inaudible words] blanket because if you can have a heat-generating fabric you can then use it for apparel, you can use it for [inaudible], for socks - heat generating socks for example.

The novelty here in the emergency blanket is again laminating the non-woven fabric with aluminium foil to end up with a lightweight, waterproof and disposable emergency blanket; this emergency blanket is being trialled by the New Zealand Red Cross but we are targeting a much bigger market. We are talking to the United Nations and the volunteer organisations in trials to see whether we can produce these emergency blankets for their disaster relief efforts, such as the recent earthquake in India.

This photograph here shows a wool curtain in front of a giant heater to test its ability to protect the home from radiation heat. The idea here is to secure the wool blanket outside the glass window to protect homes from radiation heat and from impact by burning and flying objects that move with a bush fire front.

What I have here is one of the commercial blankets that is available right now. It's made out of a non-woven fabric, very thick, it's got hooks as you can see around the edge here that you can use to hook it to a window. It comes in a standard size here, which would fit to most windows, but you can order it in other sizes as well. This product has now been launched by the company called Cease-Fire Technologies recently, just in time for the bushfire season in Australia but, as you know, bushfire is not a threat just in Australia, so the potential market for this is in overseas countries as well the bushfire threat, as you've heard through the news, some countries are under those situations.

The worldwide market for filters is of the order of \$600 million per year and it is totally dominated by synthetic fibre. Yet, wool has this unique property that if you introduce an electrostatic charge through the fibre it will retain it for a long time - static charge that can attract dust and minute particles, making the wool fibre an ideal medium for air filtration. Wool is also better than synthetic fibre because it's got low flammability and it has the ability to absorb some toxic chemicals, so making a wool filter an ideal material for air-conditioning. This project is being conducted with the CSIRO in conjunction with a commercial partner and already CSIRO have come up with two new technologies - two new methods to produce an electrostatic wool filter for this particular application.

Revolutionary wool direction: the objective here is to develop new applications for wool to diversify into new markets. We have a total of 13 projects with an investment of \$5.3 million. The challenge here is in lateral thinking and the questions we are asking ourselves and the scientists are: can we make a wool fibre much finer, much softer than what it is now without changing the micron? In other words, can we make a 21 micron wool feel like an 18 micron wool. That's the challenge. Can we apply nanotechnology to the wool fibre to enter the wool fibre into electric magnets? Is it possible? Or can we have an intelligent wool garment that can cool us down during a hot summer day - another challenge?

So, these are the challenges that we put to the scientists to encourage them to come up with new, innovative ideas, revolutionary wool directions, that's what we say, and a good example of that is the project I'm studying here - continuous wool blend filaments. Wool waste, chest hair, crutch, bellies and low quality wool are decomposed into protein and then blended with polymer to produce continuous wool blend filaments, not a short length fibre but more like a continuous wool silk filament. Yet this fibre can retain the unique properties of the wool fibre in the way that it can absorb moisture like the wool fibre and you can engineer the fibre to any diameter, any micron - the end here to arrive at with the condensed wool filament at about 10 and 12 micron so that it can compete with cashmere and silk fibre. That is still in an early stage of development, whereas you can see in this picture here the scientists at Deakin University have been able to produce a continuous wool blend filament fabric and this particular fabric already showed the promise in its ability to absorb dye better than the control sample on the top. Pretty exciting.

Fundamental wool science: the aim of this program is to gain a better understanding of the wool fibre structure and its composition. It is pure fundamental science but it will lay the foundation to develop particle applications, such as new technology for shrink proofing, new technology for whiter wool fibres. We have a total of 10 projects with an investment of \$7.2 million. The key partners in this whole area are the CSIRO in Geelong, Canesis in New Zealand and the German Wool Research Institute that I mentioned before, which are collaborating in the program.

Training and technology transfer: the objective here is to train and implement knowledge base in wool buying, processing and manufacturing to the processing industry. We have commenced the project with a total investment of \$3.9 million. So far, we have training courses in India, China and Vietnam - a total of 12 training courses, and recently we have signed agreements with the five universities in China that are involved in the China/Australian Wool Innovation Network that I mentioned earlier.

The next program is in processing costs and cost competitiveness and quality. The objective here is very simple: to reduce the processing costs and to improve the quality of top yarns and fabrics. We've got 15 projects with a total investment of \$2.8 million. A good example of that is Murata Vortex spinning. It's a new machine to have been launched in the last few years and at the International Machinery Exhibition last month there were reports that Murata have received orders for 72 Murata Vortex spinning machines - a significant order. The reason for that is because this machine can spin 25 times faster than a conventional machine and it can spin directly from the sliver without having gone through a roving process. So, the cost saving is really significant.

The only problem is that the machine was developed for synthetic fibre, for cotton, for short staple fibre. It's not really applicable for wool and last year at our annual meeting I did report that we did commission a feasibility study on the use of short staple wool into this machine and I am pleased to report that this study has been completed successfully and we are now working with three companies in Australia in conducting some further

industrial trials to use the Vortex yarns. We also investigated another project on the use of longer staple wool through this Murata Vortex spinning machine with CSIRO and the Murata Company in Japan itself.

The wool contamination survey was conducted last year involving 20 global woollen mills around the world who process roughly 95 million kilograms of wool and the result has been recently released to show us that since the last survey in 1993, which is 10 years ago, the frequency of contamination had dropped by one half since the introduction of nylon packs, so that's certainly a positive side there. However, the contamination is still a key issue for farms because farm contamination is representing 92% of the total of contamination and the most important of these is hay bale twine, a very high level of contamination caused by hay bale twine and then, to a much lesser level would be the fertiliser bags and chicken feathers or bird feathers.

On the other hand, metal contaminations represent about 6% of the total contamination. So, in response to this survey, AWI has set up an industry advisory panel to help us look at the recommendations of the survey and implement suitable measures to reduce contamination. For example we now know that hay bale twine is a very difficult problem - a significant problem - and we have now set up a meeting with hay bale twine manufacturer and the industry is trying to find a way to minimise this problem and the meeting was actually held two days ago.

The next program is on Easy Care: the end here is to develop easy care apparel for the more formal and casual wear markets. We've got six projects with a total investment of \$2.4 million. Last year I reported our work in developing a machine washable suit with Berkeley Apparel and I am pleased to report that the suits are now available at David Jones stores across Australia for the price of \$529 each. A suit that you can put in a machine to wash and the picture here actually is from an ad on major city buses in Sydney and Melbourne for the machine washable suit. It's a very successful promotion because Berkeley Apparel is now working on machine washable suits for women. But the potential application of this technology is not limited to formal wear, but its also for casual wear and corporate uniforms and we have already received enquiries from overseas companies who are interested in our concept of machine washable suits.

The next program is on improved appearance retention: to enhance the appearance and appearance retention of the wool apparel products. Pilling and wrinkling are the two major consumer complaints regarding wool products and this program aims to address that. We've got five projects with a total investment of \$3.1 million.

An exciting project is the permanent bright shades of wool, because the off-white colour for wool has limited its use in casual wear, business shirts, in sportswear, where bright white colours are predominant. The commercial benefit in achieving a treatment that can permanently achieve white bright colour for wool will have a lot of potential promise. These projects were reported last year and I'm pleased to report that the feasibility has been completed and we have now entered commercial negotiation with a major chemical company to enter the development phase of this project. At the same time we've got two key CSIRO organisation divisions working on this project.

This last program, building on wool's natural image, aims to explore the growing trends to bring a product to raise market share; at the same time seeking alternatives to eliminate unfriendly chemicals produced in various processing steps. We've got six projects with a total investment of close to \$1 million. A good example of that is a plasma treatment project. One major threat to the wool industry is the presence of a chemical called AOX in the treatment of wool top machine proofing, and the plasma proofing of wool has proved to be a very good alternative and not producing any chemicals that aren't wanted and it can be effective as shrink proofing treatment. We are working with overseas mills to do further trials and negotiation is in progress with two major machinery manufacturers.

So, looking towards the future, we anticipate significant progress in developing wool blend and easy care products for the young consumer market. With the advance of non-woven technology disposable wool product is now a viable option. What about pure wool disposable babies nappies, for example? We are entering wool into the medical and healthcare products. We anticipate further share of the uniform market, shoe products, machine washable suits and total easy care and, finally, development of a product suitable for the huge potential market in China and America.

So, in conclusion, we now have a range of projects covering the whole wool product line. New products are reaching the shop fronts. Exciting development is in progress with commercial partners to build up new markets for wool. Thank you for your attention.

Kevin Bell:

While you're there, Nathan, has anyone got any comments about the program, or questions they'd like to ask, or points of clarification of Nathan? I think we've got some questions over here. Max?

Question from the floor:

Well done, Nathan, on all those products, etcetera. You say you're working in with joint ventures to develop these but one area that does seem to be lacking a little bit is promotion. It may not be your area but I just wonder if we shouldn't revisit direct promotion in specific areas just to accommodate some of this well-done work?

Nathan Ly:

I think this is a topic that Dr Len Stephens probably would like to address this afternoon. Our position is that as far as our R&D projects and products coming up to that is concerned, we certainly want to bring those products to the market, working with a commercial partner to bring the product to the market. But I think AWI probably have a position on promotion that Dr Len Stephens will say something about.

Kevin Bell:

I think that will be dealt with this afternoon, Max, but I think there is a difference between promotion of a piece of research technology - where that has to be taken to the market - and generic promotion, which, as you know,

woolgrowers of Australia gave AWI a mandate not to do, to stick to research and development. But if they want otherwise, that would go on the agenda obviously. Thanks.

Question from the floor:

Ian Campbell, retired woolgrower. Nathan, the things that you are doing and AWI is doing is extraordinary really, the things you outlined this morning. But I would like to pick up one section; building on wool's natural image. I think we have a great problem in wool, because the fact is that for a lot of people it is prickly. From the humble sock, right through to the high fashion area, the wool has got to be wearable and soft. My worry is you have got all these programs going - which are fantastic - but how are you going to guarantee that the wool fibre that goes into those wool products is going to be wearable when it comes out the other end?

Nathan Ly:

Thanks, Ian. We had a discussion on that this morning. I certainly agree with you that the comfort is very important for wool. A lot of work has been done in the past related to wool comfort. CSIRO have done a lot of work in linking that to prickle and the coarse fibre but obviously, the picture doesn't end here.

At AWI we have projects to look at the prickle problem and also the comfort factor. We actually share a project in the [inaudible] area, collecting commercial garments in shops around the world, and doing some wear trials to look at the prickle problem and the comfort factor. But it is certainly an area that we need to address, I agree with you there. That is an area on which we will try to focus in the future.

Comment from the floor:

I think most of that work has been done. We know about the prickle factor and how to pick it and all the rest of it but it seems that we still get this mixing of wool, and it only takes a small amount of prickly wool to blow up a lot of good wool. I have just got a couple of suggestions. One is vertical integration, which people have tried and it is hard to install, but I think it is one way where you can have specified wool that is going to come through to the end.

Also where I think perhaps AWI could do a lot of very good work is talking to the whole pipeline about the need for this and the reason. I really believe that if they don't and that this isn't overcome, this is one of our great limitations on selling large quantities of wool.

Nathan Ly:

That is certainly one area [in which] we are planning [to do research]. We have got a proposal to bring the manufacturers over to Australia to have a chat with the woolgrowers, to organise a forum so that the woolgrowers can listen to the manufacturers needs and vice versa.

Kevin Bell:

Thanks, Nathan. A question over here?

Question from the floor:

Alan Henderson. I would like to ask, with your bale twine contamination, has any work been done to isolate where the contamination is coming from? Is it coming from feed-lot situations, or general paddock situations extensively run or ??

Nathan Ly:

That will be the next item we will do. The survey has just been completed. We now have an industry advisory panel to identify that and that will be the next step we need to take. As I mentioned to you before, bale twine represents a significant component of the whole of on-farm contamination. We had a meeting two days ago to discuss it with relevant industry to find a way to overcome that. It is certainly an issue we should look at, yes.

Kevin Bell:

A question over here?

Question from the floor:

Neil Bilney, Kojonup, Western Australia. Something that concerns me - and it again came up here today - is your emphasis on reducing the price and being price competitive. I have difficulty accepting that wool will ever become price competitive and believe that we need to have the focus and the concentration on the quality. I think with only 2% of the garment market, I believe that we need to concentrate on that higher value, higher price, and forget about trying to screw the woolgrower or wool producer down as low as he can to produce the product. I think we have got a supreme product and we need to sell it in those markets and get that higher price.

Nathan Ly:

I agree with you there, Neil. If you look at our second slide, it mentions two of our key objectives are to defend existing market share, product improvement and process improvement. So certainly the quality is a very important issue there for wool. But we want to do it two ways. We want to do it through that, but also through process improvement. We are talking about a processing pipeline there - the conversion from the raw wool to the end user, to the end fabric - and how we can reduce the processing cost along the wool pipeline.

Kevin Bell:

Thanks, Nathan. Do we have any further questions for Nathan? One over here, thank you.

Question from the floor:

George Ward, New South Wales. These wools we are using for what I would call industrial purposes - filters and so on - are they inferior types of wool or do they have to be wool of very high quality?

Nathan Ly:

It depends on the application. Mostly it will be the inferior quality of wool but if you look into filtration for medical applications, you might need a good quality of wool. It is really high value-added if you go into the filtration market for medical applications. They are prepared to pay a significant amount of money for the filter.

Question from the floor:

Thank you. The second question is this question of whiteness. Is it going to be a very expensive process to ensure that the wool retains its whiteness?

Nathan Ly:

The project there is to come up with an inexpensive process. We have made some progress there. We have some feasibility studies to see that we can produce it. Producing white wool is not difficult; there are a lot of chemicals that can do that now. The difficulty is making it permanent. You can go to the market now and you can buy a white wool garment. But if you hang it in the sun, or you wash it and hang it up, it can turn yellow very quickly. So the key issue is to make a permanent treatment.

Comment from the floor:

Thank you very much. I believe that here, in Nathan's work, this is where the future of wool lies. We have got to go ahead with new processes. We have been weaving and wearing wool for thousands of years. The department that Nathan is in I think is doing a wonderful job and I want to congratulate you and your staff.

Nathan Ly:

Thanks, George.

Kevin Bell:

Thanks, George. I do not think we have any more questions, so thank you very much, Nathan.