The primary strategy for WRONZ is to support industry investment that will generate opportunities for new products made from New Zealand wool.
Mission:
To promote, encourage and fund scientific and industrial research, development, technology and information transfer that benefits New Zealand’s post harvest wool industry.
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It is with great pleasure that I am reporting to you on behalf of the Directors of the Wool Research Organisation of New Zealand Incorporated (WRONZ) for the year ending 30 June 2017.

Wool has traditionally been a significant contributor to New Zealand’s economy. In July the Ministry of Primary Industries’ latest quarterly forecast found wool export revenue fell 28 per cent to $550m in the year through June as a lack of demand from China weighed on prices.

This decline, combined with PETA’s (People for the Ethical Treatment of Animals) recent campaign, “I’d rather go naked than wear wool”, highlights challenges the industry faces and illustrates how essential it is we continue to promote the value of wool as a natural 21st century fibre, as well as the high animal welfare standards in New Zealand that protect our sheep and other animals.

The majority of sheep farmed in New Zealand produce coarse diameter fibre that is mainly used in floorcoverings — broadloom carpets and rugs. Synthetic fibres have closed many of the functional performance advantages that wool previously held, so carpet manufacturers are able (and do) resist wool price pressure by simply substituting with synthetic alternatives.

The ongoing lower price for wool is having an effect on the quality of the clip at the farm-gate, which is a warning sign for the New Zealand wool industry. However, there appears positive demand for high value New Zealand wool carpet in the USA, which is against the international trend for wool carpet demand.

WRONZ has set itself the task of finding new high value and volume uses for New Zealand coarse wool and its fundamental priority remains the innovative research for new wool products and new uses for wool.

It has also continued to represent the interest of the broader New Zealand Wool sector by co-funding a project with New Zealand Merino (NZM). Its aim is to communicate New Zealand wool’s environmental credentials based on WRONZ funded Life Cycle research. It has also actively engaged with the International Wool Textile Organisation (IWTO), and this investment over a number of years has positioned New Zealand well as a leader in sustainable and ethical wool textiles. Dave Maslen of NZM deserves much thanks for his work on behalf of the industry.

Professional development has been identified as a crucial component to the future of the industry, however there are no wool teaching courses available for industry or students. Lincoln University has been reluctant to reinstate previous Certificate and Diploma courses for Wool.

WRONZ has funded Allan Frazer for the past few years to work on behalf of the New Zealand Wool Industry coordinating the reintroduction of specialist wool teaching papers. We thank Allan for his efforts to reinstate the Certificate of Wool Technology with new provider Taratahi. It is hoped the Certificate in Wool Technology will start later this year. Allan will continue to negotiate the reintroduction of the Diploma in Wool Technology and Taratahi has indicated interest in providing the course. Negotiations are continuing with Lincoln University to provide wool education papers at degree level.

WRONZ has arranged for details of successfully completed projects from the first wool consortium to be made available for distribution by media releases about innovative research of new wool products.

The archiving of historical New Zealand funded WRONZ is progressing, with past WRONZ documents continuing to be digitised from recovered hardcopy reports.

Research

WRONZ continues to fund research in partnership with the Ministry of Business, Innovation and Employment and wool industry members. Its first five-year Wool Consortium contract with the Ministry has now been successfully completed, with the final projects wrapping up in March 2017.

In addition, WRONZ has also completed the first year of the priority research programme again in association with Ministry of Business, Innovation and Employment but under Partnership Programme funding. Its aim is to find new high value and volume uses for New Zealand coarse wool.

This exciting research is structured to generate transformational opportunities for the coarse wool based industry. Whilst WRONZ is still working with traditional manufacturing industries to develop and authenticate new technical textiles, the majority of the research investment seeks new ways to utilise wool as a source of high value keratin – for example for use in cosmetics and high value textile fibres.

After the first year of the programme the research is still largely in the discovery phase to determine the properties and functionality of both deconstructed wool fibres and the reconstituted materials in a range of physical forms. This is a long-term project with a high degree of risk, and commercial success is difficult to predict.
Financial Overview

The WRONZ investment portfolio continues within a volatile market. The robustness of the investment policy and investment structures established by WRONZ has continued to provide positive income growth, despite a market correction during the September 2016 quarter. The investment portfolio performance and investments that make up the fund are reported in detail in this document in the consolidated financial statements notes. Total income from the investment portfolio for the period generated $2.010 million compared to the previous year’s income of $1.838 million. We thank BNZ Private Bank and Bradley Nuttall for their expert assistance in managing the investment portfolio.

Our financial performance in 2016/17 has enabled the research funding capability, and commitments to be maintained on the strength of the investment portfolio. Expenditure by WRONZ on research and scholarships in the reporting year totalled $1.89 million which when leveraged with Ministry and industry co-funding has resulted in $2.99 million being invested over the period.

On 30 June 2017, WRONZ had total assets of $41 million, the majority of which are held within the managed investment portfolio of $39 million. Operating revenue for the 2016/2017 year was $3.5 million, a slight decrease on the previous year, due to the completion of the first wool consortium and commencing of the second wool consortium funding. Operating revenue in the previous year was $3.7M.

The reduced net surplus of $3,021 (c.f 2016 $0.73m) reflects the increase in research expenditure as the new uses projects gather momentum under the new Partnership Programme.

Appreciation

Finally, and before closing I’d like to acknowledge and thank my fellow Directors for the contribution they have made throughout 2017, and especially the work of Peter Sheldon as Chair of the Finance Sub Committee and retiring Director Mike Petersen.

I would like to take this opportunity to thank Mike for his efforts in working tirelessly for WRONZ over the past 15 years. Mike chaired the WRONZ Board from 2003 to 2008 and was responsible for transforming the organisation into a sustainable post-farm-gate research funder, following the grower reforms and the restructure of the New Zealand Wool Board. Mike led the board through a reorganisation of WRONZ assets to provide a more diversified investment portfolio. This mix of short and long-term investments now provides flexibility and risk management to enable WRONZ to consistently fund research for the post harvest wool industry.

On behalf of the Board, I want to thank and acknowledge the work of Wool Industry Research Limited Directors and especially Chairman Graham Brown.

I would also like to thank WRONZ staff, Ian Cuthbertson, Research Manager, and Al Boa, Finance Manager, for their continued commitment and dedication to the New Zealand wool industry.

We look forward to seeing as many of you as possible at our Annual General Meeting in October. Wishing you all the best for the year ahead.

Derrick Milton
WRONZ Chairman

$41 million
Total assets of WRONZ on 30 June 2017

$2.99 million
Total expenditure invested on research and scholarships for the 2016/2017 year
Wool Research Organisation of New Zealand Incorporated (WRONZ) is a specialist funder of post-harvest wool research, development and information transfer for the New Zealand wool industry.
The directors of Wool Research Organisation of New Zealand Incorporated (WRONZ) utilise income derived from its capital funds to fulfil the primary objective of the organisation – to promote and encourage scientific and industrial research.

The organisation’s secondary objectives which are ancillary to the primary objective are wide ranging and relate in the main to the promotion and conduct of research and other scientific work and the enhancement of the position of New Zealand wool in international markets.

The New Zealand wool industry is confronted with numerous challenges. Sheep farm profitability is under pressure from increasing costs, the New Zealand dollar has been at historical highs, and farm-gate returns from wool are low. Prices for crossbred and mid-micron wool have bounced back to a degree, but they are still significantly lower than needed to positively stimulate the recovery of a competitive wool growing industry. The need for innovative high-value, new-uses for crossbred wool, and the creation of stronger linkages along the wool value chain is widely acknowledged.

Those along the wool value chain similarly face significant cost and currency challenges, particularly those whose businesses are based in New Zealand. The greater complexity and costs associated with processing wool (compared to most alternative fibres) and diminishing consumer awareness of the inherent values of wool, present challenges for wool processors internationally.

It is against this background that WRONZ in 2010 formed the Wool Industry Advisory Group, to establish the New Zealand Wool Industry “research priorities”.

It successfully established a wool industry research consortium in February 2011, and all research investment is managed on behalf of WRONZ by its subsidiary company, Wool Industry Research Limited under the research consortium criteria.

During 2014/15, the Board canvassed the views of members about the future role of their organisation culminating in a meeting to confirm the strategic direction of WRONZ.

Members clearly supported a change in focus, with research funding shifting to new uses for wool from traditional areas such as wool carpets. WRONZ subsequently applied to the Ministry of Business, Innovation and Employment for a second Wool Consortium focussed on further developing new uses for crossbred wool, and other new innovative ideas generated by commercial entities.

The emphasis of WRONZ funding within this strategy is in applied research and development in partnership with one or more commercial investors. However WRONZ will continue to maintain a research focus upon fundamental and enabling science for wool that improves knowledge of the properties of the wool fibre and which sustains a knowledge platform for the developments of new processes or products.

### Strategic Focus

The directors of Wool Research Organisation of New Zealand Incorporated (WRONZ) utilise income derived from its capital funds to fulfil the primary objective of the organisation – to promote and encourage scientific and industrial research.

**Promotion and funding of strategic research that is aligned to present and future industry priorities.**

**Funding priorities are focused on:**

1: **Securing wool’s position as a sustainable and natural fibre**

In order to extract value through being an environmentally-sustainable, natural-fibre based industry, the wool industry needs to demonstrate market leadership in the environmental quality and sustainability of its products, with low environmental impacts across the entire value chain.

2: **Minimising and eliminating obstacles to wool’s use and performance**

Responsiveness to market demands means removing market and technological barriers to the use of wool products. This will include capitalising on the intrinsic properties and phenotypic variation of wools in order to provide competitive advantage, unique selling points for diverse wool products and the enhancement of fibre, fabric, and product performance.

3: **Exploiting wool’s positive intrinsic characteristics**

To maximise value for a significant fraction of the New Zealand wool clip, new knowledge and technologies are required to generate and capture higher value in traditional carpet and apparel areas, and in particular to develop novel added-value wool products outside traditional uses.

**Prudent management of the investment fund**

The Board’s guiding principle in the management of the investment funds is to maximise the income while retaining the spending power of the capital base to invest in activities aligned to the rules and objectives of WRONZ.

**Industry role Industry leadership**

WRONZ will take a proactive role in facilitating greater co-operation with like-minded organisations to maximise the benefit from the limited funding for research and associated development available within the industry. In doing so, it will maintain a close association with wool industry bodies, aligning with and supporting initiatives where appropriate.
Wool Research Organisation of New Zealand Incorporated (WRONZ) main activity is to fund research on behalf of the New Zealand Wool Industry. In order to maximise the benefits to industry from its funding investment, since February 2011 WRONZ has funded research in partnership with the Ministry of Business, Innovation and Employment and wool industry members. Its first five-year contract with the Ministry has been completed, with a second contract under the Ministry's Partnership programme under operation for 20 months.

The Ministry of Business, Innovation and Employment approved a new programme commencing on February 1, 2016 with combined value of $3 million per year for a period of seven years, providing a $21 million research investment fund. The programme will run until January 31, 2023. Total funding available in the new programme is $21 million over seven years, of which up to $8.4 million will be contributed by the Ministry with the remaining $12.6 million to be contributed by WRONZ and industry.

The research programme is administered by the organisation's wholly owned subsidiary company Wool Industry Research Limited, (WIRL) formed in 2011 to meet the criteria for a research consortium.

The board members for Wool Industry Research Limited are:

- Graham Brown (Independent Chairman)
- Susanne Clay (appointed April 2016)
- Dr Robert Finch (appointed 2011)
- Dr Nigel Johnson (appointed April 2016)
- Derrick Millton (Chairman Wool Research Organisation of New Zealand)
- Mavis Mullins (appointed April 2016)

Kennie Tsui, Senior Investment Manager at MBIE; and Dr Jolon Dyer, Science Group Leader, Food and Bio-Based Products at AgResearch attend meetings as observers.

The primary strategy for Wool Industry Research Limited is to support industry investment in and benefit from, post farm-gate, market-driven research and development, which will generate new value and opportunities for products made from New Zealand wool.

**Wool Industry Research’s strategic goals are to:**

- develop a collaborative culture within the industry attracting industry involvement and investment in research and development
- build demand through providing authenticated evidence of wool’s natural benefits, and positive environmental and health performance
- build value through new products and improved performance of existing wool products
- structure investment to maximize the value created for New Zealand through ensuring the commercial exploitation of the Intellectual Property generated from that investment.

The outcomes of “industry good” science are generally expected to be made available to all New Zealand wool-based companies, but WIRL's main priority is to partner with individuals or groups of companies to assist them to undertake confidential research specific to their businesses and to capture the opportunities available to them.

Much of the investment from the initial research consortium was deliberately invested in “industry good” areas, and therefore it is complicated to assess the benefits to New Zealand accurately. One year following completion of the consortium, a conservative evaluation of the contribution to export receipts from products developed or significantly improved by WIRL’s investment is $10M per annum, with possibly the largest potential new income yet to come on stream.

**Research Portfolio Overview**

- $10 million p.a.
  - Conservative evaluation of the contribution to export receipts from products developed or significantly improved by WIRL’s investment.
The focus of the new Partnership Programme is to pursue new non-traditional high volume and high-value uses for wool. It will have limited ability to support the status quo for traditional uses, but will also invest in improving the environmental performance of wool products and identification of the positive health and wellbeing benefits from products containing New Zealand wool.

It will focus on development of highly promising developments made in the initial Partnership Programme in using reconstituted wool keratin in a range of forms and non-traditional materials.

The following table shows the spread of funding (invested or committed to date since WIRL’s inception) across the three main breed types and as a percentage of the total spend.

A breakdown of expenditure by product sector is shown in the following table.
Summary of Research Conducted in the 2016/17 Year

Environmental Credentials Extension

In the previous consortium, the scope of investment allowed WIRL to co-fund this work with The New Zealand Merino Company (NZM), but the change in focus towards new uses for wool in the new Partnership Programme meant that it falls outside of the scope of the partnership. Given the ongoing importance of the work for the broader New Zealand wool industry, the WRONZ Board decided to support the project as a co-funder outside of the WIRL programme.

Over the past 12 months the focus has been on maintaining relationships within the International Wool Textile Organisation (IWTO), IWTO Sustainable Practices Working (SPWG) Group, IWTO Technical Advisory Group (TAG), Sustainable Apparel Coalition (SAC), and the Outdoor Industry Association.

Key to this has been the provision of outputs from the various Life Cycle Research programmes to the International Wool Textile Organisation and from there into a centralised Wool Sustainability dataset.

Four international events have been attended as part of this programme;

IWTO Round Table Meeting – Biella, Italy
IWTO Congress – Harrogate, England
Outdoor Retailer – Salt Lake City, USA (January 17)
Outdoor Retailer – Slat Lake City, USA (July 17)

International Wool Textile Organisation (IWTO)

The New Zealand Merino Company (NZM), over the past 12 months and through the Eco Credentials work programme, has maintained a strong relationship with the IWTO. During this period, significant changes have occurred within both the IWTO and the Sustainable Practices Working group.

As agreed within the Eco Credentials work program, NZM remains New Zealand’s representative in a technical advisory capacity on the sustainable practices working group and the Sustainable Practices working group.

This role involves the provision of technical engagement and leadership regarding the direction of the SPWG in relation to eco credentials, and New Zealand’s stance within this. This engagement ensures that the interests of the New Zealand wool industry are represented and are aligned to the priorities of the SPWG.

Full Sustainable Practices Working Group meetings were held in Biella and Harrogate, with teleconferences held between meetings. The core function of the SPWG and the associated Technical Advisory Group is to generate and compile data and information that can be shared in a coordinated and consistent manner with global standard setting organisations. This is essential as the standards organisations build tools based on available data, which in many cases is out of context, inaccurate or out of date. The SPWG ensures that there is a pool of data that is validated as being accurate. The SPWG and TAG also engage with standards organisations and NGOs to provide information and to support their inclusion of wool as a natural sustainable fibre. It is important to note that this does not include marketing. It is also important to note that this is focused on ensuring that the data is accurate and relevant to the wool being assessed, rather than simply about proving the sustainability of wool.

Other International Wool Textile Organisation activities:

Summary Paper


Twist Magazine

An influential trade publication, published a detailed article that summaries the activities of the IWTO, and the tools that TAG has been compiling to support the assessment of wools environmental performance. This was authored by Dr. Beverley Henry, with support from the broader group.
Livestock Environmental Assessment Performance (LEAP)

SPWG has been engaging with Livestock Environmental Assessment Performance (LEAP), LEAP is a multi-stakeholder initiative partnering to benchmark the environmental performance of livestock supply chains. The process was initiated by the Food and Agriculture Organisation of the United Nations, and a group of agricultural and food business representatives. The IWTO TAG and SPWG have been engaging with LEAP to ensure there is consistency and alignment between the environmental benchmarking and methodology work being undertaken by TAG. This further legitimates the activities of the IWTO and the validity of the data sets that TAG is developing.

Key initiatives being undertaken by LEAP during 2017 that have relevance to wool include:

1) Biodiversity

The establishment of guidelines or quantitative assessment tools to measure the impacts of livestock on biodiversity. There are significant implications for New Zealand wool within the biodiversity context, with the potential for positive positioning to be established. This will require further research and should be made a priority.

2) Soil carbon stock change

Food and Agriculture Organization has commissioned a scoping document to assess methods for the monitoring and reporting of soil carbon stock change in grasslands. IWTO through the TAG group has the opportunity to contribute to this work, to assist in ensuring that any methodologies developed are practical and representative for wool products.

3) Water Foot-printing

Considering the potential to develop water foot-printing guidelines for livestock farming systems. This is a future work stream for LEAP. New Zealand, through the New Zealand Merino Company has undertaken initial water foot-printing methodology development and accordingly is in a strong position to be able to contribute to this work-stream.

4) Nutrient Management

The Nutrient Technical Advisory Group has developed a set of draft guidelines for modelling flows and impacts of nutrients in livestock farming systems. It is important that the ITWO TAG are involved in the public review period for these.

The Sustainable Apparel Coalition

The Sustainable Apparel Coalition (SAC) full member meeting was held in Bangalore, India on May 22-26, 2017. The Sustainable Apparel Coalition has developed the Higg Index, a tool designed for textile brands to assess the relative sustainability of materials used in their product range.

The International Wool Textile Organisation has been engaging with SAC since the Higg Index was launched in 2012 to address significant gaps and flaws in the data used to derive the score for Wool Textiles. The SAC has invited the IWTO to be part of the various technical working groups, and to submit data to enable improved and more representative scoring for wool. To supply this data, the IWTO, the SPWG, and associated TAG have been collating and validating data from member countries and submitting this into the SAC. Wool data from New Zealand has been shared, through the combined research and investment of the New Zealand Merino Company, Wool Research Organisation of New Zealand and Wool Industry Research Limited. As part of the Eco Credentials Work Programme, Dave Maslen has been part of this process since 2012. Progress is being made in the refinement of the Higg Index and underlying data sets. New Zealand has a recognized presence within the SAC through involvement in technical working groups alongside IWTO representatives.

Textile Exchange

Textile Exchange is a global NGO focused in the establishment of more sustainable/ethical textile supply chains. Over the past three years, Textile Exchange has developed the Responsible Wool Standard. While outside the scope of the Eco Credentials work, a watching brief has been maintained. This has high relevance to the New Zealand Wool Industry, and will generate increasing interest within the global wool value chain. Responsible Wool Standard has now been formally released and supply chains, and growers are at various stages of engagement with the Textile Exchange. This continues to generate significant media internationally.

Through engagement with the Outdoor Industry Association, European Outdoor Group, the Textile Exchange and other industry contacts and networks, it is evident that there is a high level of interest from textile and apparel businesses in the standard, with many making public statements of intent with regard to its adoption. This will require the engagement of all aspects of the value chain, including growers. It is notable that the IWTO has not endorsed the standard. The Australian Wool Industry is also opposed to the standard.

Outdoor Industry Association

A close relationship with the Outdoor Industry Association has been maintained, including attendance in the twice-annual sustainability conference. This is an important forum for both fine and strong wool as it is a highly regarded forum for textile sustainability generally, and tends to forecast trends that will filter through the global textile industry. As an example SAC and Higg Index was initially established as the “Eco Index” within the Outdoor Industry Association. These meetings have reinforced the alignment and commitment of the OIA and its members to the rollout and adoption of the Higg Index.
Development of Stable Isotope Traceability

WRONZ has funded work on the Stable Isotope Traceability concept for many years, with this final investment focused on pulling all previous work into a format suitable for submission to the IWO as a draft test method for determining country of origin for wool fibre. The ability to apply an objective test to materials containing wool at any stage in its manufacture or use provides the ability to demonstrate and ensure the integrity of the full value chain through confirmation of country of origin.

Using concepts already commercially proven in other agriculturally based industries, traceability of wool can now be determined by measurement of stable isotopes. Research at AgResearch and elsewhere has demonstrated how measuring differing levels of stable isotopes — in wool’s case carbon, nitrogen, oxygen and sulphur — corresponding to wool from different countries can be used for a traceability system. The distinctions between conditions on which the fibre is grown are "hard wired" into the chemical nature of the fibre. Aspects such as temperature, altitude, rainfall levels, soil, air purity combine to generate unique reproducible levels of stable isotopes in the fibre. These levels survive the various severe challenges that the fibre undergoes during processing and use, such as dyeing, cleaning, and pressing.

This project has developed a draft standard for presentation to International Wool Textile Organisation for wool traceability measurement together with supporting interlaboratory trials designed to identify and estimate sources of variation from sampling, laboratory preparation, and measurement procedures. The interlaboratory trials resulted in hydrogen isotopes being dropped from the analysis given that at this stage the variation introduced during the preparation phase meant that its inclusion did not improve the accuracy of the process.

A new draft standard has been submitted to the IWTO for review and progress towards adoption as a full IWTO test method. This project has been completed.

Printed Circuit Boards

New Zealand crossbred wool fibre could replace glass in circuit boards in higher-end products and products where weight is an issue.

A new research project being led by AgResearch is aimed at development of an innovative wool-based material to be used for circuit boards that will meet high end market demands for high-speed, wireless and eco-friendly devices.

Circuit boards are used in almost every modern electronic device and manufacture of these boards is a $71 billion per annum industry.

The project targets use of New Zealand crossbred wool fibres as the fibre reinforcement in circuit boards. In preliminary work carried out by AgResearch, University of Canterbury and Lincoln Agitech, these wool fibres have been demonstrated to inherently have a dielectric constant better than that of glass at MHz frequencies, with a dissipation (energy loss) factor comparable to silica fibres. These two factors are key criteria in preventing the loss of data and improving the speed of data transfer for circuit board materials.

Medullated (partially hollow) fibres containing trapped air within their matrix are expected to further reduce the dielectric constant of the fibre which is critical in the production of a high-performance board. In addition, the fibres are lighter than glass. Therefore, wool fibres appear not only suitable to replace glass, but can provide better performance characteristics allowing use in higher-end products and products where weight is an issue. Successful completion of this research will allow for the development of new high value-add products based on primary industry products.

Next-Generation Helix Filter personal protection device

Image courtesy of Meo Mask & Lanaco Ltd
**Wool based Fire Retardant**

Wool could be the answer to avoiding severe environmental and health risks associated with traditional organohalogen fire retardants.

A new research project being led by AgResearch aims to build on preliminary work which showed that combinations of keratin derived proteins demonstrate excellent fire-retardant characteristics.

In this research, a bio-based fire retardant (FR) technology will be developed, based on previous results from a proof-of-concept study on new fire retardants that used a range of protein combinations, and included wool keratin as a major ingredient. Wool is well-known for its inherent fire retardance. In this work, different proteins will be combined and assessed for their FR properties; the resultant FR treatment will avoid the severe environmental and health risks associated with traditional organohalogen fire retardants. Applicable markets of such a protein formulation are many and varied, including but not limited to building materials, paint, clothing and upholstery.

This project will build upon the knowledge gained from the initial proof-of-concept, and will establish the science that underpins the synergistic behaviours observed by different protein combinations, and will engage with industry partners with whom to develop the formulation and application of a commercially suitable product. Global demand for fire retardants is valued at US$7.0 billion p.a. and growing with an expected increase of 4.6 per cent p.a. through to 2018. Current organohalogen fire retardants have severe environmental and human health risks and are being phased out, opening up a niche for new materials. Consumer awareness around residues and high levels of noxious gasses produced by synthetic materials (including fire retardant products) in the human environment has increased and a bio-based substitute will be a unique and attractive alternative.

**Next-Generation Helix Filter**

Next-Generation Helix Filter is a company specific project co-funded and lead by Lanaco Ltd designed to further develop high performance filtration media to build their presence in the personal protection area, as well as to expand the potential use of wool based filtration media into new areas.

Lanaco has successfully launched personal protection devices in several international markets utilising the outputs from previously funded research, and are building on this to further optimise filtration effectiveness and stability.

**Formation, Structure and Chemistry of Wool Fibres**

This research project delivered by AgResearch is a basic science research project focussed on deepening the understanding of wool structure and chemistry, seeking to identify next-generation approaches to support the long-term goals of the Partnership Programme around new high-value uses for crossbred wool. The overarching goal is for new materials from wool to enable its use in novel, non-traditional areas.

The outcomes of the project include new knowledge of the mechanics and chemistry of natural wool fibre formation within sheep follicles in the knowledge that understanding this area will identify challenges and provide potential leads towards development of new processes and materials derived from wool keratin. Useful information is being generated not only from data and scientific conclusions generated, but also from the new methods used to explore fibres – for example measurement methods and component separation techniques. Because of the direct relevance to the new-uses objectives of much of the work included in this project, most of the outputs of the project are being held confidential to the science team.

Image courtesy of AgResearch & Lanaco Ltd

Image courtesy of AgResearch & Lanaco Ltd
New Uses for Crossbred Wool

This project led by Lincoln Agritech is by far the largest project supported by WIRL, and has been structured to lead and provide focus to the partnership investment programmes. The project has two connected objectives – the first to develop novel methods of breaking the wool fibre down into its component materials; the second to develop a range of processes to reconstitute the deconstruction materials into useful new materials suitable for use in new high value materials.

The project builds on earlier joint funding by New Zealand Wool Services International and WIRL, and the outcomes of the project work are necessarily remaining confidential to these organisations in the expectation that viable commercial opportunities will result. New Zealand Wool Innovation Ltd has been formed by these organisations to provide the commercial rigour around the research programme, and lead commercialisation when appropriate.

A range of prototype deconstruction/reconstruction methods have been developed and are under evaluation. The programme leader is Lincoln Agritech, who also manages major sub-contracts with research from Otago University, AgResearch, Deakin University, Otago University and several other smaller service contracts.

Scholarships

Scholarships are now required to be more closely aligned to the broader WIRL investment programme to increase the relevance of the work, and ideally to provide improved chances of retention of the Scholars/Research Fellows within our commercial industries or academic institutions.

In the past period one fellowship – that of Amy Phillips – has been directly supported by the Wool Industry Charitable Trust, with two others being linked as resources within subcontracts with AgResearch, Agritech and Otago University.

WIRL strongly endorses the incorporation of fellowships within research projects to bring new enthusiasm and ideas into the wool industry.

Professional Development

WRONZ believes it is important that professional development is supported within the New Zealand wool industry, and intends to more aggressively promote the availability of funding for development over a range of disciplines important to the functioning of individuals and the betterment of the industry.

WRONZ Board administer this fund directly. It allows for up to a $10,000 contribution towards a range of development activities for individuals involved in the NZ wool industry. The recipient must provide matching investment towards the cost of the development sought, and provide WRONZ with a written report on the activities undertaken.

In the past twelve months, two Lanaco staff members were assisted to attend conferences, training courses, and broader related industry familiarisation.

Member companies are encouraged to apply to WRONZ for assistance with academic and professional development for existing or new staff.

To apply for scholarships, or for more information contact: Ian Cuthbertson, ian@woolresearch.com
Membership

Wool Research Organisation of New Zealand Incorporated (WRONZ) exists to serve the interests of its members, with membership spanning the wool value chain and those who provide services along it. The members are represented at the board table by:

- Three directors appointed by Meat & Wool Trust
- Two directors elected by New Zealand Members
- One director nominated by the Royal Society

There are a number of classes of membership of the organisation, including Ordinary, New Zealand, Grower and Honorary Membership.

Ordinary Membership

The Ordinary Members are:

a. Directors of Meat & Wool Trust representing New Zealand wool growers. Wool growers are foundation members who in conjunction with the government formed the organisation in 1961. The majority of the capital funding was provided by wool growers and the government.

b. Directors of Wool Research Organisation of New Zealand Incorporated

New Zealand Membership

The New Zealand membership class merges the previous industrial and carpet members. To be eligible for New Zealand membership, members must be actively involved in the post-harvest wool industry in New Zealand including, but not limited to, the wool textile manufacturing industry, the wool scouring industry or the carpet industry.

New Zealand membership provides members with:

- preferential access to research and development technologies funded by WRONZ
- the right to elect two directors of WRONZ
- access to WRONZ information papers.
- input into determination of research strategies and project priorities.

New Zealand members have been members of WRONZ since 1965 and pay an annual membership fee. New Zealand members have also contributed to the capital of the organisation over the years and donated equipment.

Grower Membership

Grower membership is available to all New Zealand based individual sheep farmers. Provides access to WRONZ information.

Honorary Membership

Honorary membership granted by the WRONZ Board to persons who in the opinion of the Board has rendered eminent service to the wool industry, science, or technology, or to the organisation.
New Zealand Members 2017

AgResearch Limited
Briar Patch Ltd
GL Bowron Ltd
Carrfields Primary Wool Ltd (CP Wool)
– Primary Wool Co-operative Ltd
Cavalier Wool Scourers Ltd
– Canterbury Woolscourers
Cavalier Wool Scourers Ltd
– Hawkes Bay Woolscourers
Cavalier Bremworth Ltd
– Norman Ellison Carpets
H Dawson Sons & Co. (Wool) NZ Ltd
FibreTech New Zealand Ltd
Godfrey Hirst Ltd
– Canterbury Spinners Ltd
Lanaco Ltd
National Council of NZ Wool Interests
New Zealand Merino Company Ltd
New Zealand Wool Dumping Ltd
New Zealand Wool Services International Ltd
Paragon Wools Ltd
SGS Wool Testing Services Ltd
The Merino Company Ltd
– Levana Textiles

Wools of New Zealand Ltd
Woolyarns Ltd
Wright Wools Ltd

Ordinary Members
Directors of Meat and Wool Trust Ltd
Directors of Wool Research Organisation of New Zealand Incorporated

Honorary Members
Dr G A Carnaby, MNZM, BSc(Hons), PhD, DSc(Hons), FRSNZ, FNZIP, CText, FTI
Mr D Douglas
Dr A R Edmunds, OBE, MSc, PhD, FNZEI, CText, FTI
Mr A Kane
Mr A G Lawrence, OBE
Mr C L MacGillivray, BAgCom
Dr A J McKinnon MSc, PhD, FRSNZ, FNZIC
Dr W S Simpson, OBE, MSc, PhD, FNZIC, CText, FTI
Mr J D Watt, BSc(Hons), MSc, CText, FTI
Board of Directors
Wool Research Organisation of New Zealand Incorporated

Derrick Milton (Chairman)
Appointed by Meat & Wool Trust Ltd

Tony Cunningham
Elected by New Zealand Members

Andrew Morrison
Appointed by Meat & Wool Trust Ltd

Don Fraser
Elected by New Zealand Members

Mike Petersen
Appointed by Meat & Wool Trust Ltd

Peter Sheldon
Nominated by The Royal Society

Appointments during the year

Tony Cunningham
Was re-elected October 2016 by New Zealand Members

Andrew Morrison
Appointed October 2016 by Meat & Wool Trust

Board Secretary
Alistair Bea