

IWTO

WOOL REVIEW

ISSUE 1

INTERNATIONAL WOOL TEXTILE ORGANISATION



**A PROUD HERITAGE OF WOOL
WITH AN EYE TO THE FUTURE.**

UNILAN EST. 1953
SUPPLIER OF GREASY OR SCOURED WOOL, LANOLIN,
AND WOOL TOPS FROM ARGENTINA



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**IWTO IS THE
RECOGNISED
GLOBAL AUTHORITY
FOR STANDARDS IN
THE WOOL INDUSTRY**

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**IN THE RHYTHM OF THE NEEDLES,
THERE IS MUSIC FOR THE SOUL**


- ANONYMOUS





MERINO WOOL'S UNIQUE NATURAL BENEFITS FLOW THROUGH TO LUXURIOUSLY SOFT AND STYLISH CLOTHING

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INSPIRE | EDUCATE | CONNECT



FROM SHEEP TO SHOP

Since 1930, the International Wool Textile Organisation (IWTO) has represented the interests of wool growers, traders and related industries. From sheep to shop, it continues to develop best practices in these fields. By facilitating industry strategy and maintaining the highest standards in wool growing, manufacturing and sustainability, IWTO and its industry partners foster connections between members and stakeholders. That's the reason IWTO is the recognised global authority for standards in the wool industry.

Twice a year, IWTO provides a platform for members to engage, communicate and consider industry strategies. The annual IWTO Congress offers a wide range of topics, covering the entire wool industry pipeline and highlighting the champions of the chosen host nation. At the IWTO Wool Round Table, members debate relevant issues and industry pressure points, and set priorities for working groups and committees.

One of IWTO's top priorities is coordinating key research on life cycle assessment, sustainability, wool sheep welfare, wool's benefits to health and wellness, and wool trade bio-security. Through the dedication of scientists and their active participation in IWTO working groups, IWTO and its research partners supply objective answers to questions about the role wool plays in today's market-driven, sustainability-conscious world.

Around the globe, IWTO-licenced laboratories ensure that wool is traded to the highest

standard and is above scrutiny. As a non-profit trade association, membership fees, event sponsorships and partnerships wholly fund IWTO's activities. Members actively contribute to formulating acceptable strategies for all involved and communicating outcomes.

"IWTO RECOGNISES THE NEED FOR **ROBUST TEXTILE EDUCATION**"

Lack of fibre knowledge has left customers with more questions than answers. Only solid information, grounded in demonstrable science and communicated in a consumer-friendly manner, can rectify this situation and empower the custodians of future textile businesses to make well-informed decisions. In parallel, IWTO recognises the need for robust

textile education along with young professionals participating in our events and projects.

I hope you enjoy this issue of our wool industry review, and welcome your comments or suggestions. Feel free to mail them to me at white@iwto.org.

DALENA WHITE



DALENA WHITE
IWTO SECRETARY GENERAL



THE GLOBALISATION OF WOOL

AS the 64th IWTO Congress concluded in Harrogate in June 1995, I suspect only a handful of delegates heading home from this picturesque North Yorkshire spa town realised that the world of wool was already beginning to witness the most radical of structural changes since the Industrial Revolution began in the early 19th century, transforming the landscape of English textile towns and cities only a few kilometres away.

I like to remind friends and colleagues that in the early stages of my long life in the wool industry, menswear, womenswear, carpets, curtains and upholstery were almost entirely produced locally, the impending globalisation of wool textile manufacturing still something of an academic subject and almost taboo.

Today, it is not unusual for a wool product to have visited four continents before finally reaching the consumer, with all the environmental and ecological questions such a process poses.



PETER ACKROYD
PRESIDENT



For the 86th Congress in Harrogate in early May 2017, we have deliberately selected a theme that few, if any, of the 1995 delegates would have been able to comprehend: "Wool in a Digital Age".

Moving at a similar pace to globalisation, the world of e-commerce and digitalisation now affects every aspect of the wool business and presents us with an interesting challenge: How should an industry proudly steeped in tradition convey a message of quality, provenance and sustainability in a world of instant communication and product availability?

I very much look forward to sharing with you, during the three days in Harrogate, a very British story of a vibrant, forward-looking local wool industry that all but invented the word "niche" in a region of the UK that paradoxically pioneered the globalisation of textile retailing in the 1980s and '90s.

**YOURS IN WOOL,
PETER ACKROYD**





"TODAY, IT IS NOT UNUSUAL FOR A WOOL
PRODUCT TO HAVE VISITED FOUR CONTINENTS
BEFORE FINALLY REACHING THE CONSUMER"



SUSTAIN



ABILITY



WELFARE AND THE

WOOL SHEEP WELFARE CONCERNS FARMERS, RETAILERS AND CONSUMERS ALIKE.



Consumers increasingly see wool as a sustainable lifestyle choice in fashion textiles and interior solutions. Understandably, retail buyers and corporate social responsibility (CSR) managers need to be assured of the provenance and sustainability credentials of the products they select in their ranges. For a raw material like wool, the welfare of the sheep that produce the fibre must be above scrutiny, and supporting documentation needs to be available for CSR audits.

Transparency in each step of the wool pipeline is key. The transformation of raw wool into textile products is part of a global industry. Local environmental laws and animal welfare legislation govern the wool grower: Best practice guidelines and technical specifications vary depending on country-specific production systems, national legislative frameworks and wool sheep types. In addition to legal requirements, business economics dictate that wool growers handle resources with due care and responsibility. When wool sheep are farmed to the highest welfare standards, as appropriate for each specific production system, the benefits accumulate. Best practices in animal health and nutrition, including disease prevention and care, and sound land management practices result in healthy productivity and sustainable growth for both farmer and ecosystem.

The IWTO Wool Sheep Welfare Guidelines were developed through a consultative process involving representatives of all the individual grower countries and technical experts in the fields of animal welfare and veterinary science, through IWTO's Sustainable Practices Working Group. The guidelines are intended to clearly define and widely promote animal welfare practices in wool production, and to reflect the wide diversity of production environments around the globe. These good welfare practises are closely aligned with the OIE Terrestrial Animal Health Code.

Animal welfare and environmental legislation is continually evolving. The Guidelines should be read in conjunction with local laws, and provides an overview of the relevant national legislative frameworks of the major wool-growing countries. The document will be updated regularly to include the latest science, research and development in the field of wool sheep husbandry.

Download the IWTO Wool Sheep Welfare Guidelines at www.iwto.org/resources/guidelines.

ENVIRONMENT

THE IWTO WOOL SHEEP WELFARE GUIDELINES ARE IN EVERYONE'S BEST INTEREST.

UNDERSTANDING THE ENVIRONMENTAL IMPACT OF WOOL WORDS ONA VILJOEN



A comprehensive study of the environmental impact of Australian wool was recently published in the *Journal of Cleaner Production*: "Resource Use and Greenhouse Gas Emissions from Three Wool Production Regions of Australia" by SG Wiedemann, MJ Yan, BK Henry and CM Murphy. It is the first study to investigate greenhouse gas (GHG) emissions in three production regions and with three types of merino sheep. It also presents the first wool-specific analysis of water use with comprehensive life cycle assessment (LCA) methods.

The study "fills an important knowledge gap regarding the environmental impacts of wool production on Australian farms, which is important for understanding the whole production and use life cycle of wool," says lead author Stephen Wiedemann.

The study's three specific aims were to 1) Quantify resource use (energy, water and land occupation); 2) Estimate GHG emissions, including those associated with land use (LU) and direct land use change (dLUC) from wool production; and 3) Identify impact hotspots in the production system.

REFLECTING THE VARIETY OF WOOL PRODUCTION SYSTEMS

For this study, farms from geospatially defined production regions in three Australian agro-climatic zones were selected: 1) the western wheat-sheep zone of Western Australia, which produces fine merino wool; 2) the eastern high-rainfall zone of New South Wales, which produces superfine merino wool; and 3) the southern pastoral zone in central South Australia, which produces medium merino wool.

Farms in region 1 produce grains on arable land and typically graze sheep on non-arable land or pasture leys. Native pastures with introduced clover support grazing. Farms in region 2 are typically mixed grazing enterprises



that produce wool, lamb and beef, with only small areas of cropland used for forage. Native pastures with introduced clover or sown pastures support grazing. Region 3 contains large sections of arid lands, with smaller areas of semi-arid native grasslands or savannahs, which support low densities of sheep and cattle, with no cropping and few alternative farming systems available.

Data was collected from 10 farms via site visits, interviews and a survey in 2013/14. A further 34 farms were included for the specialist sheep farm data set, covering 2006–2010 to account for inter-annual variation.

A MODEST IMPACT ON WATER RESOURCES

Fresh water consumption refers to evaporative losses, or uses that incorporate water into a product that is subsequently not released back into the same river catchment. According to the study authors, "the focus on fresh water consumption reflects the intent of the LCA to investigate the impacts of resource use, either on human health, natural ecosystems or competitive water users."

None of the farms used in the study used irrigation water for pasture production. However, water use was dominated by supply losses and to a lesser extent direct drinking water requirements.

The study found that water resource use was highest in production regions with low annual rainfall, where the reliance on water from small farm dams was high and evaporation losses were also high. Applying the appropriate water stress index (WSI) showed wool to have a relatively low impact on constrained water resources in the three regions.

The study concluded that the "impact of using water to produce wool in these Australian regions is comparatively low both in terms of competitive water uses (in other words, for human consumption or industry) or the environment."





GHG EMISSIONS SIMILAR ACROSS REGIONS

Fossil energy demand varied significantly in response to climate, production intensity and level of inputs, the study found. Arable land occupation and energy demand were highest in the mixed grazing and cropping regions, where larger amounts of supplementary feed grown on arable land was used for sheep production.

The highest energy values were observed in Western Australia, where fertiliser and pesticide inputs associated with pasture and forage were much higher. In the extensive management systems used in the pastoral zone in central South Australia, fertiliser use was lower, hence lower energy demand.

It was clear from the study that non-arable land comprised the largest proportion of total land occupation, which indicated low resource use for crop land that can be used for other fibre and food production systems.

The results showed that greenhouse gas emissions (excluding LU and dLUC) did not significantly differ between regions or wool type. Emissions ranged from 19,5 to 25,1 CDE (or $\pm 4,1$ kg to $\pm 4,8$ kg CO₂). Methane was the largest contributor (79–89%), followed by nitrous oxide (9–11%) and CO₂ (3–9%).

However, a regression analysis of individual farms in the CSF data set revealed a trend towards higher impacts from systems

where wool yield per sheep was lower (such as New South Wales high-rainfall zone CSFs). Differences in wool and meat production per ewe were largely associated with the type of merino sheep bred in each region.

As the first multiple-impact LCA on resource use and GHG emissions for different production regions in Australia, the study makes a valuable contribution to the literature. Further research is anticipated to more accurately determine the impacts from a change in wool production, given the significance of meat production in the wool supply chain.

Ona Viljoen is the spokesperson for Cape Wools

TOOLS FOR ASSESSING THE ENVIRONMENTAL IMPACT OF WOOL

As the science of life cycle assessment evolves, so does the need for consistent and comparable results.

WORDS DR BEVERLEY HENRY

Life cycle assessment (LCA) is the most commonly used tool for assessing the environmental performance of a product, measuring impacts such as resource use and greenhouse gas emissions. Wool is no exception. LCAs have been conducted on greasy wool, wool top, yarn, carpet, insulation and apparel.

IWTO got involved in 2012 when it noticed gaps in the data, problems in the methods and, equally important, that much of the data was out of date. Because of weak LCA data and methods, wool scored poorly in ratings that compared it to synthetic fibres, despite its many inherent natural attributes.

Fast-forward to 2017, and wool LCA has come a long way. Since 1997, LCAs have been conducted under the ISO 14000 family of standards. Now, IWTO, through its LCA Technical Advisory Group, has produced a set of guidelines titled IWTO Guidelines for Conducting a Life Cycle Assessment of the Environmental Performance of Wool Textiles.

Designed for use by LCA practitioners, the Guidelines provide clear direction for those interested in using LCA to understand environmental impacts across the wool supply chain.

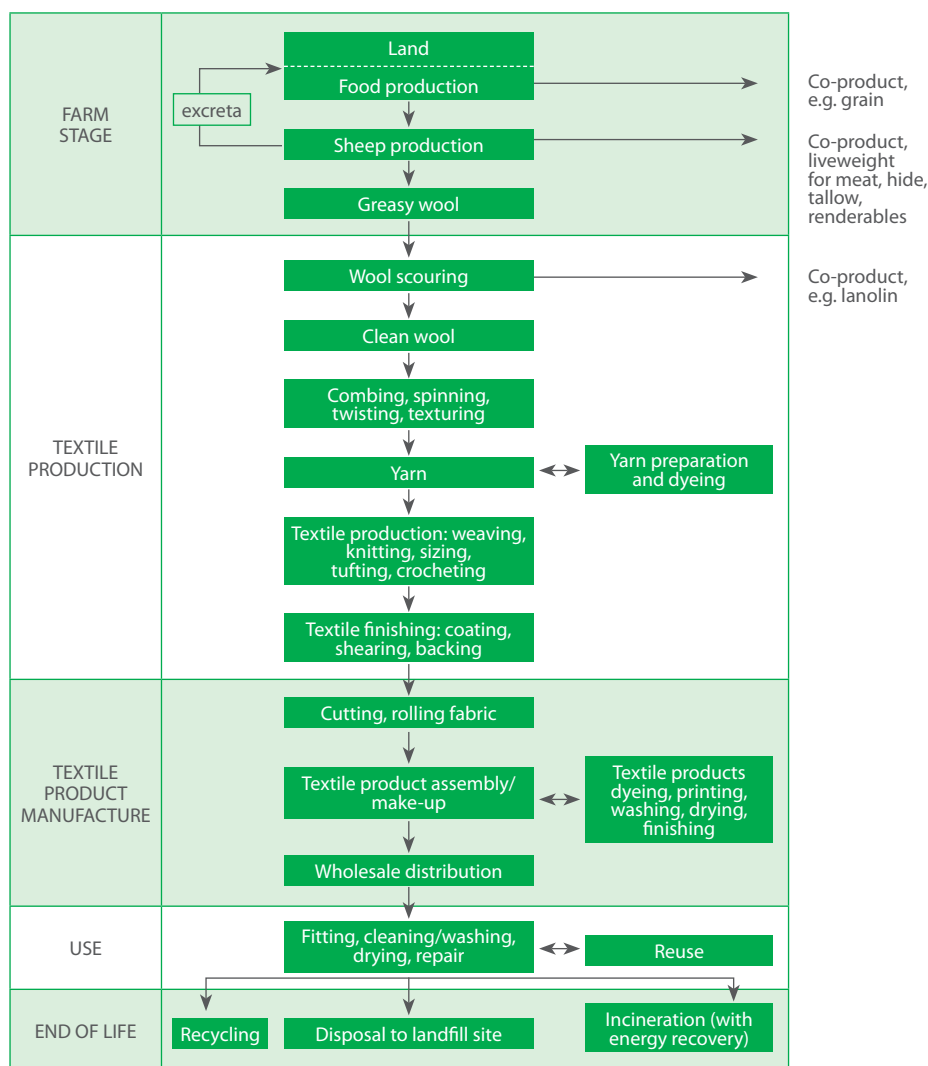
A drive towards consistent results

For wool textiles, LCA models the use of resources and emissions that occur from the production, processing and manufacturing of products; the use of these products; and the end-of-life recycling or disposal of the products. Depending on choices and assumptions, however, different LCA practitioners may get very different results for the same product. With the lack of industry-specific guidance beyond the ISO standards, previous studies have been inconsistent and even misleading.

With a focus on the assumptions, methodology and data requirements specific to wool supply chains, the IWTO LCA Guidelines are structured according to the four main phases of an LCA study set out in ISO 14044: goal and scope, inventory analysis, impact assessment and interpretation.

Communicating results

Like all models, LCA will always be a simplification of the real world, but with good practice principles outlined, bias can be minimised



System boundary diagram for the life cycle of textile produced from wool sheep (excluding inputs, outputs and emissions). Transportation can occur between any of the various stages outlined. (Source: Henry et al. 2015b; adapted with permission from BSI 2014)


and inappropriate assumptions recognised. Moreover, users of the IWTO LCA Guidelines can learn to recognise limitations in interpretation of results. Ultimately, the purpose of wool LCA is to communicate information to consumers and other stakeholders about wool textile products so informed choices can be made. Through textile choice at design phase, for example, or in decision-making about recycling and final disposal, such as choosing composting to naturally provide nutrients into the soil, LCA-based information on environmental performance can influence behaviour towards environmental sustainability.

Learn more

The Guidelines represent an up-to-date synthesis of knowledge and good practice for wool LCA. As the science of LCA is still evolving, updates are planned as understanding improves and new or revised methods are agreed internationally.

Download the IWTO LCA Guidelines at www.iwto.org/resources/guidelines.

Dr Beverley Henry is Associate Professor at Queensland University of Technology and a member of the IWTO LCA Technical Advisory Group



"CONSUMERS
DESERVE TO
HAVE ACCESS
TO ACCURATE
INFORMATION
ABOUT THE
PRODUCTS THEY
PURCHASE AND
**THE IMPACT
THEY HAVE ON
THE PLANET**"

Wool producers are stewards of large areas of land around the world. Recent surveys revealed that about 30% of sheep producers in Australia actively manage and/or plant native trees and shrubs on their properties, covering on average 11–14% of the total farmland area.

As well as the direct benefits these trees and shrubs provide, including shelter and erosion control, they also perform another significant function: the act of carbon sequestration.

Carbon sequestration is widely recognised as a significant contributor in alleviating global warming. It occurs naturally when plants take carbon dioxide – a greenhouse gas (GHG) – from the atmosphere and use it through photosynthesis to grow. While some carbon inevitably returns to the atmosphere, an important portion of it is retained for long periods in trunks, branches and roots.



Prior to this study – one of a series funded by Australian Wool Innovation – the impact of carbon sequestration on wool production was overlooked and largely unknown. However, GHG emissions are frequently measured by life cycle assessment (LCA), and are therefore highly relevant to a wool product's environmental footprint.

The study estimated that carbon sequestration in trees on wool-producing case study farms in New South Wales and Western Australia reduced the climate change impact of greasy wool at the farm gate by 7% and 2%, respectively, over a 100-year period. In the semi-arid pastoral lands of the case study farms in South Australia, carbon sequestration in chenopod shrubs re-established through actively promoting revegetation reduced net GHG emissions per kilogram of greasy wool by 11%.

In a separate study, another group of researchers modelled a selected case study

GREEN BENEFITS

THROUGH HOLISTIC LAND MANAGEMENT, SOME SAY THAT SHEEP CAN SAVE THE PLANET. **NOW SCIENTIFIC EVIDENCE SUGGESTS THAT SO CAN THE TREES AND SHRUBS THAT ARE PART OF WOOL FARMS.**

A novel methodology fills data gaps

The *Rangeland Journal* reported on the first study to quantify the impact of carbon sequestration in trees on wool-producing farms. A novel method combining geo-spatial mapping, local climate data and yield models was developed to estimate growth and carbon biomass of trees and shrubs on case study farms in Australia.

Carbon stocks in vegetation and soils were modelled per hectare for each year, using the area, age and configuration of tree plantings, application of fertiliser to pasture, and local climate parameters affecting plant growth and decomposition. From this, the carbon sequestered in both vegetation and soils was expressed per unit of greasy wool leaving the farm gate.

Calculating net GHG emissions per unit of wool gives a much more accurate estimate of the climate change impact of wool production than simply stating the gross figure.



DR BEVERLEY HENRY
ASSOCIATE PROFESSOR AT
QUEENSLAND UNIVERSITY
OF TECHNOLOGY

farm in south-eastern Australia and found that with a greater area of tree establishment and soil management, wool production can achieve carbon neutrality.

Carbon sequestration in wool LCA – the next steps

These results are significant and underscore the importance of including carbon sequestration in wool LCA. Wool growers who invest time and resources in revegetating landscapes should receive credit for the reduction in their wool's carbon footprint, and consumers deserve to have access to accurate information about the products they purchase and the impact they have on the planet.

More research is needed, the study concludes, to better understand the placement of trees and shrubs on wool farms in order to maximise production and environmental benefits and minimise trade-offs. This study is a substantial first step towards these goals.

THE FACTS ABOUT



WOOL IS BIODEGRADABLE

A biodegradable product can be broken down biologically into natural raw materials such as carbon dioxide, water and naturally occurring minerals. These are then reintegrated into the nutrient cycle. Conditions needed for products to biodegrade are oxygen, warm temperatures and humidity.

Wool grows naturally on sheep and is made of a protein called keratin – the same protein that is found in human hair. During the biodegradation process, fungi first destroy the ends of the wool fibre. Bacteria then digest the weakened fibre by secreting enzymes. The carbon-to-nitrogen ratio of wool is quite narrow, meaning that wool has a high percentage of nitrogen, which is the reason wool biodegrades so well.

PHOTOS GALLO IMAGES/GETTY IMAGES, IWTO

WOOL

THE INCREDIBLE SAFETY, ENVIRONMENTAL AND SKIN-RELATED BENEFITS TO LIVING WITH WOOL.

Products that are biodegradable are part of a natural cycle. They come from nature and go back to nature, enriching the soil and nourishing new life. In the UK alone, about 350 000 tonnes of used clothing go to landfill every year. The numbers are similar for other developed countries. Products made out of synthetic fibres can take 30 to 40 years to degrade, contributing to the piles of waste in landfills.

Tests show that with the ideal conditions, wool products are almost completely degraded after just six months in the ground. In most tests, a wool product such as a jacket is buried in soil, which provides the necessary microbes, moisture, temperature and pH-value. To retrieve the garment more easily, it is placed between two wire grids. After a certain period of time, the test garment is dug up in order to observe and document the decay. Seams may not degrade as easily as the rest of a garment, because they consist of a double (hence thicker) layer of fabric and are often sewn with polyester thread. The dyes used on a wool product, however, do not impact the results.

WOOL IN LANDFILL



**WOOL
IS THE
OBVIOUS
CHOICE**
FOR ANYONE
CONCERNED
ABOUT THE
HEALTH OF
OUR PLANET

Superfine merino and childhood dermatitis

In the first clinical study of its kind, researchers found that superfine merino wool clothing reduced the severity of paediatric mild-to-moderate atopic dermatitis. The study concludes that traditional management guidelines classing all wool-based clothing as irritants should be modified to include superfine merino wool as a recommended clothing choice in childhood atopic dermatitis.

Understanding skin allergies

"A major focus of The Woolmark Company's investment programme is validating and communicating the health and wellbeing benefits of wool products," says Dr Paul Swan, General Manager of Research at The Woolmark Company. "There is a strong trend in the market towards healthy and environmentally friendly products, and wool's natural attributes make it very suitable as an integral part of everyone's health regime. Our [theory] has been that by actively buffering the skin's surface moisture and temperature levels, merino wool would alleviate some of the symptoms caused by atopic dermatitis – acting as a second skin."

Prickle versus allergy

A prickle is more accurately an irritation, not an allergy. Coarser fibre ends can press hard enough against the skin to trigger nerve endings known as nociceptors that send an electrical signal to the brain. Several signals from the same area, and the brain interprets these as a prickliness. Eczema sufferers have particularly sensitive skin, often believing they're allergic to wool. But Australian studies are showing that superfine merino garments are well tolerated by eczema sufferers, with a reduction in eczema symptoms being seen after three to four weeks of changing to superfine merino base-layer garments. Commercially available superfine merino is 15–18,5 microns (the diameter of the fibre). Ultra-fine merino garments are 11,5–15 microns.



PHOTOS IWTO, GALLO IMAGES/GETTY IMAGES

**IRRITATION,
ITCHINESS
OR
PRICKLINESS**
IS NOT THE
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AN ALLERGY



WOOL AND THE ENVIRONMENT



THE SCIENCE OF LCA IS STILL EVOLVING, ESPECIALLY FOR AGRICULTURAL AND OTHER NATURAL PRODUCTS, AND STUDIES SHOULD BE BASED ON UP-TO-DATE DATA AND METHODS

Tools to assess environmental performance

Life cycle assessment (LCA) is a quantitative method for evaluating the environmental impacts of a product, such as a woollen sweater, across its entire life from raw material production (cradle) to disposal (grave).

The social and economic effects of textiles are also important pillars of sustainability, but LCAs currently focus on environmental aspects of resource use and depletion, and emissions to land, water and air.

Understanding the environmental impact within textile supply chains

Just as it is important for technical experts to understand the rules and methods for conducting an LCA, it's important for all users to understand what the results mean in order to manage environmental impact across the supply chain or make sustainable choices related, for example, to garment design or purchase. Users benefit from taking into account that:

- The science of LCA is still evolving and improving, especially for agricultural and other natural products, and studies should be based on up-to-date data and methods.
- Valuation of LCA is currently restricted to those environmental impacts able to be quantified, whereas qualitative aspects, which are also important, depend on information sourced outside of LCA studies.
- For diverse production systems such as for wool, where the complex data required for truly representative LCA are not fully available, results are affected by assumptions made when simplifying or extrapolating from case studies.

Differences between products or systems in the relative contribution of each stage make it fundamentally incorrect to make comparisons of products based on partial LCA. For example, comparing climate change impacts for the fibre production stage of wool and nylon shirts is equivalent to comparing around 50% of total life cycle greenhouse gas emissions for the wool shirt with 10% of life cycle emissions in the case of the nylon shirt.

The importance and challenges of quantifying consumer use

Consumer practices for care and repair of clothing and in post-use decisions (such as passing on valued garments to family, friends or charity; reselling; or recycling) vary between and within regions and cultures. In early LCA studies, collecting data to model this phase in the life cycle of textiles has often been neglected, and most have either included assessment only to

the fibre or retail boundary or defaulted to an assumption that the use phase (and sometimes post-use phase) is the same for all clothing.

An assumption common to several studies is that all items of clothing are washed once a week using hot water and disposed of to landfill after one year. In contrast, the service life of many wool garments is several years, even decades, and weekly laundry is much less common. For items such as wool coats, infrequent cleaning with simple no-impact airing between wears is more common.

Environmental impacts and sustainability

LCA studies of textiles and clothing are valuable for quantitative benchmarking of supply chains and informing decisions on changes to reduce environmental impacts. They also support engagement with stakeholders on environmental performance and allow sustainability programmes and policies to be evaluated against significant environmental impacts.

However, challenges remain in understanding broader impacts on environmental sustainability beyond those currently included in quantitative models, and additional information may be required to identify “sustainable” fashion or “eco-friendly” textiles.

Case studies evaluating positive or negative effects of products can inform decisions on good practice for managing biodiversity.

**THE SERVICE
LIFE OF
MANY WOOL
GARMENTS
IS SEVERAL
YEARS, EVEN
DECADES**





WOOL AND FIRE

Fabrics and flames

Flammability is the ability of a substance to burn or ignite, causing fire or combustion. Burns from clothing fires are a significant cause of injury and death. While most fabrics used in clothing can burn, some are much more flammable than others. Many factors influence how easily a textile will ignite, the manner in which it will burn, and the products of its combustion. These include the source of ignition and conditions such as air flow and surrounding materials. But the most important parameter in assessing the flammability of a textile is the fibre type.

When a fire starts in a bedroom, living or dining room, where soft furnishings are the norm, fatality occurs in that same room more often than when the fire starts in any other room. Gas, smoke or toxic fumes are the most common causes of fatalities due to fires in dwellings.

Given the right conditions, all fabrics will burn. There are four key aspects to burning behaviour:

1. Propensity for ignition;
2. Smoke density;
3. Toxicity of products evolved from burning; and
4. Speed of flame spread.

Flame retardancy

Wool's inherent chemical structure makes it naturally flame resistant. While cotton catches alight at 255°C, the temperature must reach 570–600°C before wool will ignite. Polyester melts at 252–292°C and nylon succumbs at an even lower 160–260°C, but wool does not melt, so it cannot stick to the skin like synthetics do. In addition to a high ignition temperature, wool's attributes include: a high limiting oxygen index (LOI) – the measure of the amount of oxygen needed to sustain combustion; a low heat of combustion – the measure of the amount of heat energy released in the burning process; it does not melt or stick; it's self-extinguishing.

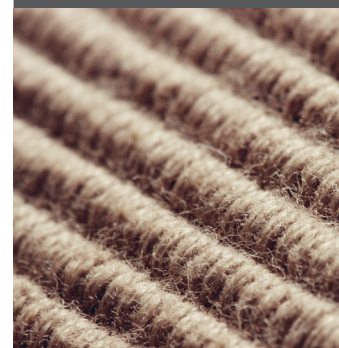
Wool's inherent fire resistance comes from its naturally high nitrogen and water content, which means it requires higher levels of oxygen in the surrounding environment in order to burn. Wool may be ignited if subjected to a significantly powerful heat source, but it does not normally support flame, and smouldering usually continues only for a short time. In addition, wool's highly cross-linked cell membrane structure will swell when heated to the point of combustion, forming an insulating layer that prevents the spread of flame.

LIVING WITH WOOL CARPETS

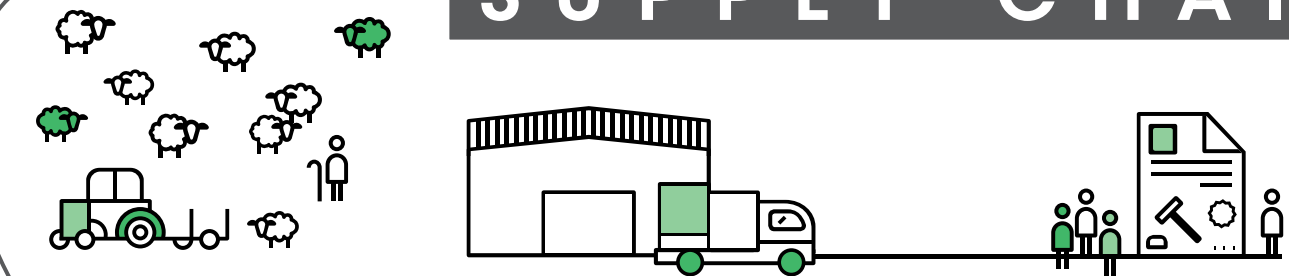
Wool's superiority in carpets is due not only to its inherently lower flammability but also its tendency to char on the surface pile. The charred layer protects the carpet's lower pile, backing and underlay. The protective effect of wool pile can be seen in the unchanged critical radiant flux (CRF), which is the minimum radiant energy a fire needs to sustain burning. The lower the CRF, the greater the tendency of the material to spread flame. Even with a non-wool underlay, wool maintains its CRF. In contrast, the CRF of nylon and polypropylene carpets drop significantly as they begin to melt and involve the underlay in the fire. This also results in greater smoke levels.

WOOL IN THE BEDROOM

There are major advantages to incorporating a wool component into bedding. Even when other fibres are present in the form of bed linens, wool significantly reduces the rate of fire development and flame spread, providing a longer potential escape period. For example, with a polyester duvet, a fire will develop 3–4 minutes after ignition, and 4 minutes later the fire will be difficult to extinguish with a hand-held extinguisher. In contrast, a wool blanket allows a slow spread of flame, low heat output and relatively little smoke even over a longer period.



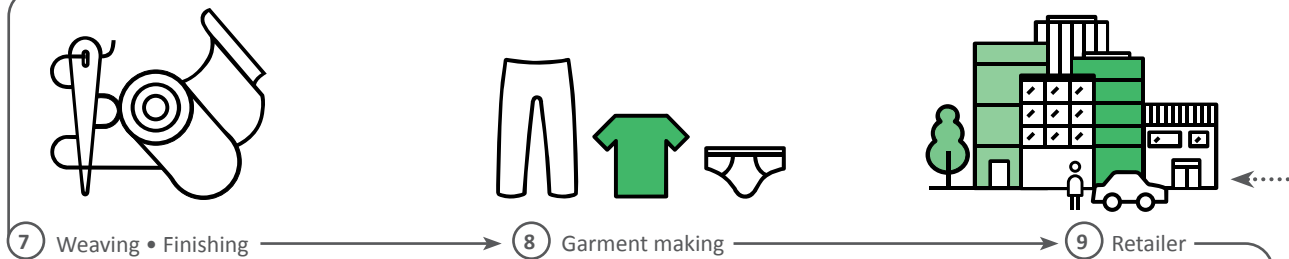
THE WOOL INDUSTRY SUPPLY CHAIN



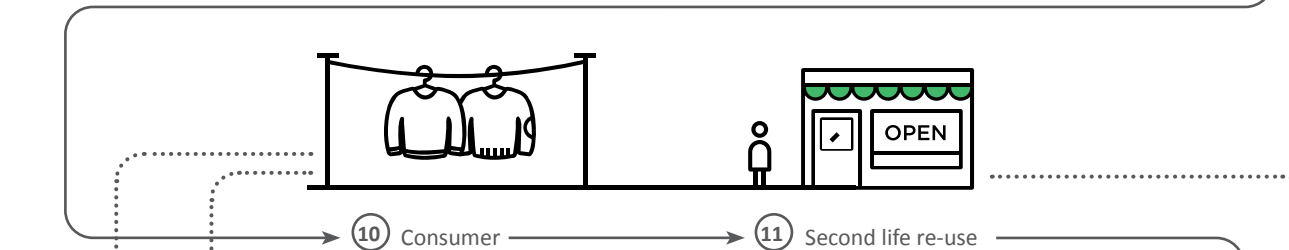
① Wool growing → ② Wool handling • Grading • Logistics • Storage • Testing → ③ Selling



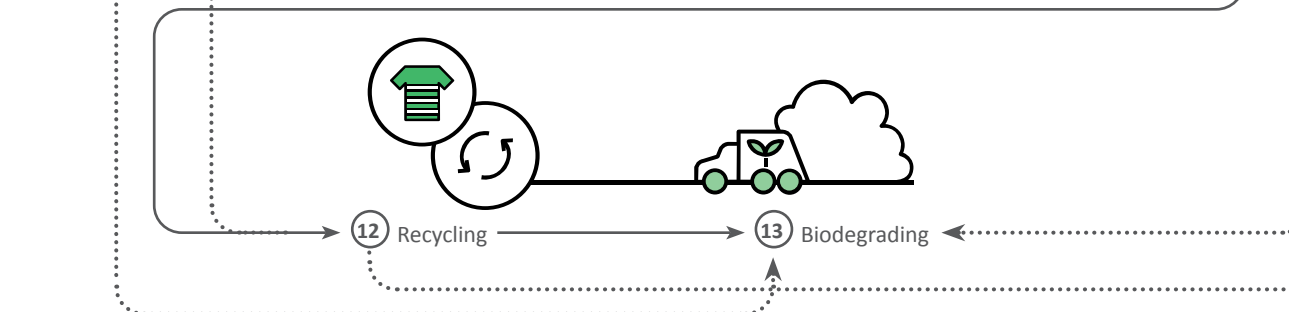
④ Preparing for export • Blending → ⑤ Scouring • Carding • Combing • Drawing → ⑥ Finishing • Drawing • Spinning



⑦ Weaving • Finishing → ⑧ Garment making → ⑨ Retailer



⑩ Consumer → ⑪ Second life re-use



About IWTO

With a world-wide membership encompassing the wool pipeline from sheep to shop, the International Wool Textile Organisation (IWTO) represents the interests of the global wool trade. By facilitating research and development and maintaining textile industry standards, IWTO ensures a sustainable future for wool. To learn more about IWTO and its activities, visit www.iwto.org.



THE DUMFRIES HOUSE WOOL DECLARATION

THE DUMFRIES HOUSE CONFERENCE BROUGHT TOGETHER A NUMBER OF **EXPERTS FROM ACROSS THE WOOL TEXTILE SUPPLY CHAIN AND LEADING FIGURES FROM FASHION AND INTERIORS**, AND CULMINATED IN THE LAUNCH OF THE DUMFRIES HOUSE WOOL DECLARATION.

The efforts of the global wool industry to promote the fibre's natural attributes reached a new level at The Dumfries House Conference. It was organised by The Campaign for Wool and the International Wool Textile Organisation (IWTO), with support from Marks & Spencer. Held on 9 September 2016 at Dumfries House in East Ayrshire, Scotland, the conference was billed as "the largest and most prestigious international gathering of wool experts ever to be held in the UK".

The event was preceded by a dinner the previous evening at which HRH The Prince of Wales, Patron of The Campaign for Wool, hosted key members of the fashion, interiors and wool industries, including Steve Rowe, CEO of Marks & Spencer, fondly known as M&S, and model David Gandy, the face of M&S.

The conference the following day was attended by about 250 wool trade delegates, and included talks by The Prince of Wales; Steve Rowe; designer Sir Paul Smith; Nicholas Coleridge CBE, the president of Condé Nast International; Livia Firth, the founder and creative director of Eco-Age; and Allan Savory, president and co-founder of The Savory Institute. The event culminated in The Campaign for Wool and the IWTO presiding over the signing of The Dumfries House Wool Declaration, witnessed by The Prince of Wales.

The Declaration was signed by the primary funders of The Campaign for Wool: The Woolmark Company of Australia, The Campaign for Wool Trust New Zealand, Cape Wools South Africa and the British Wool Marketing Board.

The Dumfries House Wool Declaration has been created to ensure that key players, from shepherds to shop owners, commit to protect the environment and uphold the best possible practices for sheep welfare, commerce and industry. The Declaration agrees, among other things, that the major

wool-growing countries conform to the strictest standards of animal welfare as embodied in the IWTO Specifications for Wool Sheep Welfare. The IWTO Specifications are premised on the Five Freedoms of Animal Welfare as set forth by the World Organisation for Animal Health (OIE): freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury or disease; the freedom to express normal behaviour; and the freedom from fear and distress.

The Declaration is also a promise by The Campaign for Wool's funders to commit their time, efforts and talent to promoting the natural benefits and properties of wool. Peter Ackroyd, COO of The Campaign for Wool and President of IWTO, said: "In subscribing to The Dumfries House Wool Declaration, the wool industry and its members commit to care about the welfare of the wool sheep and the environment it lives in. This Declaration formalises the standards the complete wool pipeline aspires to."

The Campaign for Wool and IWTO are looking to attract support from companies and individuals across the wool textile supply chain. Ackroyd revealed that they are aiming to attract more than 500 supporters in the first phase of "recruitment". The Dumfries House Conference hosted representatives from brands such as Amazon, Ikea and ASOS.

Alan Folwell, chairman of Adam Carpets, led a discussion on the challenges of wool; delegates viewed a screening of *Slowing Down Fast Fashion*; a panel discussed the impact of fast fashion; and finally, a discussion by "The Big Shots of Wool", with representatives from the four main funding nations of The Campaign for Wool (Australia, the UK, South Africa and New Zealand), examined issues facing the wool industry in each country.

Looking ahead, Ackroyd said there will be further events to keep up the momentum generated by The Dumfries House Conference.

• www.wtin.com

WOOL CAN HELP TO DISRUPT FAST FASHION

Livia Firth, founder and creative director of Eco-Age, outlined some of the challenges facing wool in the fashion industry. She stressed the value of products that have powerful stories attached and pointed to Finisterre as an example. "Consumers are in search of a deeper rooted connection."

OLYMPIC GYMNAST SHOWCASES WOOL

Delegates were treated to a gymnastics routine by British Olympic champion Max Whitlock, who wore a 100% wool Paul Smith travel suit to demonstrate wool's versatility and flexibility when he performed his routine on a dining table. The surprise performance followed a presentation by Sir Paul Smith in which he outlined wool's versatility, pointing to diverse uses of wool, including piano heads and snooker tables.

THE DUMFRIES HOUSE WOOL DECLARATION: 10 KEY POINTS

1. Wool is 100% natural.
2. Wool is a renewable resource.
3. Wool forms part of a natural carbon cycle.
4. Wool is a natural alternative to wasteful consumer practices, since wool garments average a longer life.
5. Wool was made for recycling.
6. Wool is biodegradable.
7. Wool is naturally odour resistant.
8. Wool is fire resistant and fire retardant.
9. Wool improves indoor air quality.
10. Wool is welfare assured. The major wool-growing countries all support the IWTO and The Campaign for Wool, and conform to the strictest standards of animal welfare.

the Dumfries House Wool Declaration

The Dumfries House Conference
9 September 2016

We, the funding nations of the Campaign for Wool, hereby confirm
our support of the Dumfries House Wool Declaration.

1. Wool is 100% natural:

A natural protein fibre that is similar to human hair,
Wool grows naturally on sheep.

**2. Wool is a
renewable resource:**

Consuming a simple blend of water, air, sunshine and
grass, sheep produce a new fleece every year without
depleting finite natural resources.

**3. Wool forms part
of a natural carbon cycle:**

Sheep consume organic carbon by eating plants, and store
this in their fleece. Fifty percent of a fleece's weight is pure
organic carbon stored in a durable, wearable form.

**4. Wool is a natural alternative
to wasteful consumer practices:**

Research shows that the average life of a Wool garment
is 2-10 years, compared to 2-3 years for garments made
from other fibres.

**5. Wool was made
for recycling:**

Wool fibres are high quality and durable, capable
of re-use and recycling, ultimately reducing landfill
disposal. Wool is routinely upcycled into woollen-spun
knitwear, insulation and geotextiles –
all of which contribute to a circular economy.

6. Wool is biodegradable:

Wool decomposes in a matter of years, releasing valuable
nitrogen-based nutrients back into the soil.

**7. Wool is naturally
odour resistant:**

By absorbing moisture vapour, Wool garments leave less
perspiration on the skin, reducing odour-causing bacteria.
Easily refreshed by airing, Wool garments can be worn
longer between washes due to Wool's natural ability
to shed dirt and bacteria.

**8. Wool is fire resistant
& fire retardant:**

Naturally high in nitrogen and water content, Wool's
unique cell structure requires high levels of oxygen in
order to burn, and forms an insulating layer when heated
that prevents the spread of flames. Wool does not melt,
drip or stick to the skin when subject to extreme
heat and produces less smoke and toxic fumes during
combustion.

**9. Wool improves indoor
air quality:**

When used in interior textiles such as carpets and
upholstery, Wool absorbs and locks away pollutants such
as volatile organic carbons (VOCs) from the air more
rapidly than other fibres.

10. Wool is welfare assured:

The major woolgrowing countries namely Argentina,
Australia, New Zealand, Norway, South Africa, United
Kingdom, United States and Uruguay, all support the
IWTO and Campaign for Wool and conform to the
strictest standards of animal welfare as embodied in the
IWTO Specifications for Wool Sheep Welfare. The IWTO
Specifications are premised on the Five Freedoms of
Animal Welfare as set forth by the World Organisation
for Animal Health (OIE): freedom from hunger and thirst,
freedom from discomfort, freedom from pain, injury or
disease, the freedom to express normal behaviour, and
freedom from fear and distress. The Five Freedoms also
form the basis of strictly enforced national animal welfare
legislation in each of these woolgrowing countries.

About IWTO

With a world-wide membership encompassing the Wool
pipeline from sheep to shop, the International Wool Textile
Organisation (IWTO) represents the interests of the global
Wool trade. By facilitating research and development and
maintaining textile industry standards, IWTO ensures a
sustainable future for Wool. To learn more about IWTO
and its activities, visit www.iwto.org.

Wal Merriman - Chairman
Australian Wool Innovation

Stuart McCullough - CEO
Australian Wool Innovation

Ian Buchanan - Chairman
British Wool Marketing Board

Joe Farren - CEO
British Wool Marketing Board

George de Kock - Chairman
Cape Wools of South Africa

Louis de Beer - CEO
Cape Wools of South Africa

Craig Smith - Chair
Campaign for Wool New Zealand Trust
New Zealand Wool

Philippa Wright - Global Campaign for
Wool Executive Member
New Zealand Wool



THE TWIST SUCCESS STORY



JONATHAN DYSON
EDITOR OF *TWIST* AND
KNITTING INTERNATIONAL

IN 2016, *Twist* – the international magazine dedicated to natural fibres, yarns and fabrics – enjoyed one of its most successful years since launching in 2008. Advertising sales grew by 30%, and a new Chinese edition, launched in September, attracted the largest amount of advertising sales ever generated in a single issue.

This year there will be two Chinese-language issues: in February/March and in September. They will be distributed to 2000 senior figures at leading companies across the Chinese textile, fashion and interiors industry, including early-stage processors, spinners, weavers, knitters, garment manufacturers, designers, tailors, fashion brands, department stores and retailers.

Both issues will be handed to visitors at Intertextile Shanghai Apparel Fabrics: *Twist* February–March 2017 will be distributed at the Spring Edition of the show in March, and *Twist* September 2017 at the Autumn Edition in October. The latter will also be made available to all delegates at the Nanjing Wool Market Conference.

What's more, *Twist* October 2017 will be translated into Japanese.

Each delegate pack at the 2017 IWTO Congress in Harrogate on 3–5 May will include a copy of the May/June issue of *Twist*.



CONTACT *TWIST*

- To advertise in *Twist*, contact James Wilson: jwilson@wtin.com / +44 (0)113 360 9877
- To subscribe to *Twist* and the WTIN Natural Fibres & Yarns channel, contact Maggie Sadowska: msadowska@wtin.com / +44 (0)113 360 9817
- Contact *Twist* editor Jonathan Dyson: jdyson@wtin.com / +44 (0)779 371 8662

2016 PROVED TO BE ONE OF THE MOST SUCCESSFUL YEARS
FOR *Twist* MAGAZINE SINCE IT WAS LAUNCHED IN 2008.
THIS YEAR, TWO ISSUES WILL BE TRANSLATED INTO CHINESE.

The international magazine for natural fibres, yarns and fabrics

Twist

Issue 81
September 2016

Technical fashion

Athleisure features in The Wool Lab

Sourcing focus

Autumn/winter 2017/18 yarn trends

Mongolian cashmere looking for value boost

Mallaleius of Delph investing in the future

www.twist-international.com

Published by
 WTiN

DID YOU KNOW?

At the 2016 IWTO Wool Round Table, held in Biella, Italy on 28–29 November 2016, IWTO President Peter Ackroyd congratulated *Twist* on its coverage of the Dumfries House Wool Conference, which was held on 9 September at Dumfries House in East Ayrshire, Scotland. Ten pages of the November 2016 issue of *Twist* were devoted to the event.

“Coming a few weeks after the conference, the excellent coverage in *Twist* came as a timely reminder of the key aspects of the Dumfries House Wool Conference and the Dumfries House Wool Declaration,” he said.

COMPREHENSIVE COVERAGE

Twist magazine features all the latest developments in wool, cotton, cashmere, silk, linen, cellulose fibre, mohair, alpaca, vicuña and other rare and speciality fibres. With readers across the value chain, including fibre producers, early stage processors, spinners, weavers, knitters, garment manufacturers and retailers, *Twist* profiles leading companies and independent design talent, reports on key seasonal trends, and provides in-depth analysis on the latest activity in the natural fibres markets.



MEMBER



FOCUS

CELEBRATING WOOL

SINCE 2010, THE CAMPAIGN FOR WOOL'S ANNUAL WOOL WEEK HAS EDUCATED CONSUMERS ABOUT THE BENEFITS OF WOOL, PROMOTING WOOL-RICH MERCHANDISE IN THE AREAS OF FASHION, INTERIORS, DESIGN AND ART. **HERE ARE SOME OF THE HIGHLIGHTS FROM WOOL WEEK 2016.**

WOOLLEN IT BE LOVELY

A fully operational B&B in De Beauvoir Town, London played host to a range of activities and events for the duration of Wool Week. Esteemed interior designer Karina Garrick curated the exhibit.

For Garrick, the creation of a young, vibrant and fun home for wool that shows off its applications and performance benefits, and highlights the skill, craft and comfort with which the textile is associated, was paramount. "The space was brought to life through interiors, fashion and specialised wool products that reflect living with wool and experiencing its many performance benefits to create the perfect home, made from wool," she says.

The living room

Contemporary design and styling delivered an inviting space that combined strong colour combinations and sumptuous textures. A Liberty print carpet from Alternative Flooring created a dazzling display of colour and pattern originating from the designs of William Morris. A fun wool art installation by Jessica Dance, titled Full English Breakfast, depicted a breakfast table. Wool carpet artworks by surface designer Allistair



Covell adorned the walls, complementing the Cooper sofa from sofa.com, along with an eclectic mix of wool-filled cushions. Wall cabinets with bell jars displayed wool samples from a selection of sheep breeds, allowing visitors to engage the senses and explore the varying textures of everything from tweeds and strong fibre wools for resilient interior products to merino wool for soft-against-the-skin apparel and fine fabrics.

The master bedroom

A needlepoint tapestry by Melissa Watts depicting Herdwick sheep dominated one wall of this Zen space, which was created with comfort and rest in mind. Drawing on studies reported by The Wool Room, which show that sleeping with wool-based duvets, mattresses and pillows can improve sleep quality by up to 25%, a luxurious bed by Vispring was the natural choice. Boasting a deep, wool-filled mattress and mattress topper made using a combination of Platinum Certified real Shetland wool and Platinum Certified pure British fleece wool, it guaranteed the promise of a good night's rest. Hand-knitted throws by Melanie Porter, knitted Exmoor Horn wool cushions, Melin Tregwynt lampshades, and Mystic Blue



curtains by Mark Alexander completed the tranquil look.

The snug

A casual space for cosy evenings, this space boasted a vibrant Liberty carpet by Alternative Flooring. Art of the Loom fabrics highlighted the warp and weft of quality wool design, as did double cloth throws by Melin Tregwynt. A flamingo-pink footstool by sofa.com added a quirky touch. A striking artwork by Jacqueline Fink depicting intricate plaiting enjoyed prime position above the fireplace, highlighting the creative impact and natural flexibility of merino wool.

The study

In this light-filled space with its bright-pink walls, a stylish sheep gallery surrounded a handmade wool map by Yessica Wheeler highlighting the key wool-growing nations (Australia, New Zealand, South Africa and the United Kingdom). The ultimate merino wool armchair by Mourn Textiles designed by Steuart Padwick for Adams & Moore and a tetrad Harris tweed pumpkin stool encouraged quiet reflection.

The makers' room

If the only impediment to creativity is a lack of imagination, then the makers' room must be the heart of all things creative. This room was adorned in rich colours and laden with woven fabric samples and beautiful yarns. Trestle tables and contemporary wool stools by Aveva Design, coupled with a vivid wool carpet by Tai Ping, added contrasting textures to the space, inspiring creative thinking and imagination.

The wool-kin wardrobe

"A place to dress and to impress in only the best quality woollen garments", sums up this space, which showcased the true versatility of wool. Here, brands, designers and retailers exhibited their best merino wool products for the season. The line-up included M&S, Barbour, Christopher Raeburn, Finisterre, Sibling, Jack Wills, Paul Smith, John Smedley, Ashmei, Adidas, Jigsaw, Smalls, Anderson & Sheppard, Dashing Tweeds, Armadillo Merino, and Walker





SLEEPING WITH
WOOL-BASED
DUVETS, MATTRESSES
AND PILLOWS CAN
IMPROVE SLEEP QUALITY
BY UP TO 25%



Slater, along with the luxury brands featured in the wool pop-up boutique at Bicester Village in support of Wool Week. The room also boasted a striking wool artwork by Sally Spinks and a luxurious armchair by Melanie Porter.

The kitchen and dining area

A classic monochrome check carpet by Brintons welcomed guests into the rustic kitchen. A dramatic contemporary Kivo for Herman Miller screen, designed by Alexander Lorenz in a wool diamond pod structure, demonstrated the value of cushioned wool panels for soundproofing and noise absorption. In the kitchen, guests were invited to dine while seated on Solidwool chairs. In a bid to change the perception that wool is difficult to care for, a number of products designed to dispel the myth were placed on display in this space. Products that have been tried and tested against strict criteria and specifications from The Woolmark Company included Ecover laundry detergent, a Philips iron and an AEG AbsoluteCare tumble dryer, which forms part of AEG's total wash and dry care system for hand-washable wool garments and products.

The shepherd's hut

Bringing a touch of farming culture to the centre of London, The Wool B&B had its very own shepherd's hut, designed and built by specialist joiner Paulus Smith. Guests were encouraged to step inside this quirky space and escape from the stresses of life. A made-to-measure Vispring wool-filled mattress served as a snooze zone, a Roger Oates flat-weave carpet dressed the floor, and delightful woolly accessories by Melanie Porter, Scarlet & Argent and Rowena Mason brightened the interior.

• campaignforwool.org



GUESTS
WERE ENCOURAGED
TO STEP INSIDE AND
ESCAPE
FROM THE STRESSES
OF LIFE

EVOLUTION OF A **BRAND**

THE BENETTON GROUP, A NEW MEMBER OF THE IWTO, ENVISAGES
INVESTING MORE IN THE WOOL TEXTILE SEGMENT IN THE FUTURE,
SAYS GROUP COO LORENZO DOVESI.



Founded in 1965 as a knitwear business, the Benetton Group is today represented globally through a network of more than 5000 stores. Its brand United Colors of Benetton features ranges of apparel for women, men and children, as well as eyewear, accessories, fragrances and luggage.

Renowned for its use of colour, knitwear expertise, environmental awareness and social commitment, United Colors of Benetton presents trendy and quality outfits for all tastes.

The TV-31100 pullover

Benetton's latest innovation is the TV-31100 pullover, a smooth, seamless, figure-hugging merino wool and cashmere knitwear piece in six colours. "The garment is more than just your usual pullover," says group COO Lorenzo Dovesi.

Made of 90% merino wool and 10% cashmere, the TV-31100 is named for the postal code of Treviso, a city not far from Venice in northern Italy where Benetton was founded in 1965.

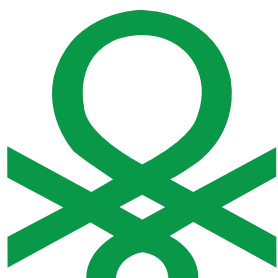
Trend alert

Benetton's women's knitwear for Winter 2016/17 include midi skirts in luxurious wool gauze with earth-tone stripes, jacquard sweaters with optical geometrics, and knitted shoppers with pom-poms. Menswear features textured wool jumpers with jacquard-patterned sleeves.

Fibre of choice

The thermoregulation characteristic of wool, making it adaptable to cold and warm weather, is just one of the reasons it will be key to Benetton knitwear ranges of the future. "With finer microns and specialised knitting techniques, the great softness, elasticity and comfort offered by wool textiles make it the fibre of choice," says Dovesi. "It remains the best option to blend with linen, cotton, silk and man-made fibres. And the sustainability credentials of wool as a renewable and biodegradable option make it a perfect fit for the environmental focus of the Benetton strategy."

• it.benetton.com





WOOL



BACK TO THE FUTURE

IN THE UK, WHERE SHEEP TEND TO BE FARMED FOR MEAT RATHER THAN WOOL, LESLEY PRIOR IS ONE OF A HANDFUL OF FINE WOOL PRODUCERS.



When Lesley Prior moved from Cambridge to a farm in Devon in 2002 with her husband, Roger, they had no idea that she was destined to become one of the UK's few fine wool producers, supplying wool to the Cornish clothing brand Finisterre.

"Sheep and the industry they support are my passion. Over the past 200 years, markets, fashions and world economics have changed and this incredible animal has adapted. Modern merinos need all the help of science to meet current conditions.

"Today's challenge is to produce the same superb quality wool, but to do it with bigger, heavier animals, fewer welfare issues and less impact on the environment. [Simply put], it's faith in sheep and their incredible ability to deliver whatever is asked of them that keeps me – and others – going in difficult times."

Lesley's foray into wool production started 12 years ago when she acquired some Bowmont merinos developed over a period of almost 30 years by the Macaulay Land Use Institute (MLURI). The institute's goal was to produce a breed with fleece of superior fineness, yet hardy enough to survive the conditions of the British Isles. They chose Shetland ewes (for hardiness) and Saxon merino rams (for fineness). The offspring were then bred back with merino to produce a core stock of 75% merino and 25% Shetland.

The result was the Bowmont's superfine wool (15–18 microns), but Scottish farmers never took to them and the money for the project dried up in 2006. Lesley had already been producing cashmere fibre from goats obtained from the MLURI, and was approached to take over the best of the flock.

"Based on very old Tasmanian bloodlines imported in the 1950s, the sheep had become small through inbreeding, with a tendency toward yellow fleeces. The wool was good, but there wasn't much of it. From the moment I touched my first fleece I was hooked. Unfortunately, I had little idea how to improve it," says Lesley.

Her breakthrough came in 2010 when she met Australian growers and other industry experts at the launch of the Campaign For Wool in London. "I was given access to all the technical help I needed and key contacts for importing better genetics," she says.



LESLEY PRIOR
PRODUCER OF SUPERFINE
MERINO WOOL AND CASHMERE

It has always been Lesley's aim to breed sheep that could produce the finest fibre possible in the UK. "I imported the first semen straws and embryos in 2012, and each year I brought in more. I work closely with Ben Watts of Bralca, New South Wales, who has helped me refine my breeding objectives and source new lines."

Lesley produces traditional, high crimping, Italian spinners-type wool that is adapted to the climatic conditions where she farms. She believes there's a good market for top-quality UK-grown merino wool and she has a queue of potential customers.

"The word merino alone is not enough either for customers or processors who are used to dealing with some of the very best

**"IT'S FAITH
IN SHEEP
THAT KEEPS
ME GOING
IN DIFFICULT
TIMES"**

Australian wools. Testing and benchmarking are important. Visual classing is the main tool of any stud master, but I also OFDA-test wool samples every year."

Lesley is in the fortunate position to be close to Europe and her customers, enabling them to visit her farm and experience her production methods first-hand. She stresses that traceability and animal welfare are important issues, so it's an advantage to be close enough for customers to visit.

Due to England's thriving merino industry 200 years ago, Lesley likes to think that the country has a new role to play. She says genetics from the Sturgeon flock were exported to New South Wales as late as the 1880s. George Peppin, born six miles from her farm, kept merinos here before emigrating to New South Wales in the 1860s.

"The UK [has the chance to] bring back to Europe the result of two centuries of hard work and effort by an industry that I am very proud to be a small part of."

DECISION TIME FOR SUPERFINE BREEDERS

FINE WOOL PRICES MAY HAVE STARTED TO INCREASE IN AUSTRALIA, BUT SUPERFINE WOOL BREEDERS STILL FACE A NUMBER OF CHALLENGES, SAY FARMERS DAVID AND ANGIE WATERS.

In their presentation at the IWTO Round Table in Biella, Italy, David and Angie Waters, third-generation merino breeders and owners of Tarrangower Superfine Merinos in New England, Australia, gave an account of the challenges and opportunities that they face in running a superfine wool operation, despite recent increases in the price of fine wool.

“The recent droughts and unpredictable weather patterns, together with the increasing numbers of wild dogs and resulting predation issues, offer real challenges to future wool-growing business plans,” says Angie.

The couple took over the Tarrangower merino stud owned by Angie’s parents in 2005, purchasing sheep from the Tarrangower flock and relocating them to their property Eastview about 30 km east of Armidale. They currently run 2 500 stud and commercial merino sheep on 569 hectares

**THE
INCREASING
AVERAGE
AGE OF
THE WOOL
GROWERS
IS ANOTHER
CAUSE FOR
CONCERN**





of land. They focus on growing high-quality and fine-crimping wool, aimed at the traditional superfine Italian market segment. Their adult sheep produce on average 15 to 15,5 micron wool and the wool from their hoggets can, at first shearing, be as fine as 14 micron. They also breed and fatten beef cattle on their New South Wales farm.

It's clear that the Italian superfine market approve of the wool produced by the Waters. In 2014, leading luxury Italian menswear brand Ermenegildo Zegna awarded them first place for a fine wool fleece and, in 2015, a third place in the annual wool awards for the finest fleeces. Natural and noble fibres are part of Zegna's heritage and over the years the company has challenged the best wool growers in Australia and New Zealand to strive for the highest quality and improve their performance season after season.

According to Angie, huge amounts of history and passion went into producing their product, as well as all-important innovation. "There's a lot of genetics that goes into producing this kind of wool. It's not a fluke."

The unsustainably low profit levels of the past years have also presented serious challenges to superfine wool growers, adds David. "Market reports are not telling the full story, as high raw-wool auction prices are not necessarily profitable for growing merino flocks at farm level."

The increasing average age of wool growers is another cause for concern in terms of future merino wool production. "Currently, livestock farmers aged between 60 to 68 years of age comprise more than 25% of the wool sheep farmers in Australia," says David.

But all is not doom and gloom, and the couple sees opportunities for growth. The continuous decline in the volume of wool produced in the traditional superfine category should have a positive influence on the price of these microns.

"Over the time we've had the farm," says Angie, "we've had to change with the industry while keeping our eyes on what we're passionate about, what we wanted achieve, and to adapt to ensure profitability."

Constant and high-level education programmes regarding on-farm management best practice should contribute towards improving the quality of the fine wool supply. The use of modern technology and new marketing possibilities also offer hope for a more positive outlook in the near future.

PHOTO AUSTRALIAN WOOL INNOVATION

BORN IN THE USA

THE VARIETY OF WOOL SHEEP BREEDS IN THE UNITED STATES OF AMERICA IS AS DIVERSE AS ITS HUMAN POPULATION. THE NATION'S 5.3 MILLION SHEEP OFFER **A RANGE OF MICRONS SUITABLE FOR A WIDE ARRAY OF PRODUCTS.**

America. Where happy, healthy sheep are raised to thrive in vast, open ranchlands. It's where bold shepherds and ranchers are genuine stewards of the earth – constantly seeking sustainable ways to ensure the future of this invaluable industry.

American wool producers are committed to quality and conservation, and are stewards of not only the animals, but also of

the land. They produce wool by natural grazing that's compatible with the environment, have a long history of providing excellent care for their animals, and make great efforts to assure their sheep are treated properly at all times. A prime example is that mulesing has never been an accepted practice in the American sheep industry.

The American Sheep Industry Association

(ASI) regularly works to ensure the proper use and handling of sheep throughout the shearing process. This includes educational seminars on shearing and wool handling, assuring the best possible treatment of livestock during the process. An emphasis on wool handling has succeeded in producing a quality American wool clip that impresses buyers from across the globe.



Although the American wool clip is small by some standards, it offers unique characteristics that appeal to international buyers. In fact, more than 50% of the country's wool is exported. China and India continue to be the largest international buyers of American wool.

Due to the fact that the United States has a limited volume of wool available each year, the international wool marketing programme is comprised of a niche marketing strategy that seeks out buyers for specific wool types and matches US supplies precisely to buyers' needs. ASI-sponsored reverse trade missions regularly introduce international buyers to the American wool clip first-hand, and consultants across the globe work to represent American wool outside of the United States.

Looking to advocate the attributes of this special fibre with an overdue update of the US wool brand, the American Wool Council began a multiyear campaign in 2016 to rebrand and promote American wool. The new mark and accompanying campaign urges consumers to embrace the natural magic of American wool.

"It is vital for the wool industry that consumers recognise the versatility of American wool – it truly is nature's magic," says ASI Director of Wool Marketing Rita Kourlis Samuelson. "When you look at wool and its values, you come back to a natural, premium product that performs at a high level in a variety of circumstances. It can be sophisticated and beautiful, but it can also be innovative and dynamic. American wool is known for its unparalleled loft and versatility. The benefits of wool simply can't be matched by any other natural fibre."

To celebrate the American spirit, which is alive in the fibre, fleece and fabric of natural American wool, the new logo will be featured on wool products. It's a bold statement that says: This is America, where innovation is celebrated, tradition is respected, and high performance reigns.



ALTHOUGH THE AMERICAN WOOL CLIP IS SMALL BY SOME STANDARDS, IT OFFERS UNIQUE CHARACTERISTICS THAT APPEAL TO INTERNATIONAL BUYERS

QUALITIES OF AMERICAN WOOL

Known for its loftiness, American wool has many uses. Blending it with other wool is a common practice to add bulk to finished products. The variations of the available wools, from diameter to frequency of crimp, mean buyers have a range of options to suit their blending needs. This flexibility and versatility, which allows wool processors to use it in a wide range of products, is the intrinsic value of American wool.

The natural resilience of American wool

and its resistance to compression enables its products to retain their natural shape and bounce. These characteristics make US wool ideal for use in knitwear, hosiery and other high-bulk end uses.

American wool is also suited for fine- to heavy-weight fabrics, as well as wools for home furnishings or non-wovens. There are a variety of high-resistance-to-compression wools available in the US that provide the signature loftiness.

CHALLENGES AND VICTORIES IN THE SA WOOL TRADE

ENVIRONMENTAL AND POLITICAL INSTABILITY ASIDE,
THE SOUTH AFRICAN WOOL INDUSTRY REMAINS BUOYANT.

South Africa faced a severe drought during 2016, which seriously challenged the nation's wool producers. Despite this, wool production levels remained steady throughout this period and even performed better than expected, with the total greasy mass produced reaching 49 704 tonnes.

The wool market performed well overall and opened to a firm start, with the

Cape Wools Merino Indicator closing 15,8% above the corresponding sale of the previous year. The positive sentiment continued throughout the season and eventually the Cape Wools Market Indicator closed at a value of R152,06/kg (clean), 6,7% short of its record high. Export earnings were up by a significant 40% on the previous year.

Trade with South Africa's primary export

destination, China, eased slightly, with export volumes dipping by 5,8%, whereas Czech Republic volumes increased significantly. The volume of greasy wool exported to Italy showed a good increase of 22,8%, with a marked increase in value for greasy and an 88% increase in value overall.

On 9 December 2015, South Africa experienced the biggest financial crisis since the start



PHOTOS CAPE WOOLS SA

of its democracy. The rand devalued by the largest single margin ever, causing the wool market to immediately return 14,3% more rands to its cash-strapped, drought-stricken producers' base. Although we all understand that a weaker rand is not in all of South Africa's favour, it was difficult not to boast of our good fortunes. Rand weakness played an important part in increasing returns to producers struggling under a severe drought.

During previous seasons, buyers reported that there was excellent demand in the market for longer and better quality wools. The demand for shorter and poorer quality wool also held up nicely and prices across the

spectrum were good. South Africa remains mules-free, which has certainly had a positive effect on both price and desirability of the South African clip as animal rights' activists increased their activities.

The SA Wool Industry Growth Plan message was agreed by industry and communicated to a diverse audience. Cape Wools is confident that the opportunity vested in this industry will bear fruit. We are already experiencing an increase in the demand for merino stock, with prices steadily increasing. Having said this, Cape Wools is under no illusion as to the complexities involved in implementing projects to drive the vision.



MZAMO BOBI (ECONOMIC ANALYSIS INTERN), NICOLE PRETORIUS (EXECUTIVE ASSISTANT), LOUIS DE BEER (CAPE WOOLS CEO), ANTOINETTE HATTINGH (PERSONAL ASSISTANT), ELIZABETH DE BEER (FINANCIAL CONTROLLER) AND JUAN VAN SCHALKWYK (WOOL APPRAISER INTERN)

RAND WEAKNESS PLAYED AN IMPORTANT PART IN INCREASING RETURNS TO PRODUCERS STRUGGLING UNDER A SEVERE DROUGHT

2016 MILESTONES

Cape Wools is confident that the South African industry will enjoy many more highlights and milestones in 2017, following on from positive developments in the past year.

- Dr George de Kock, Cape Wools Board Chairman, was elected to chair the **Biosecurity Working Group** where wool-producing nations discuss common biosecurity interests. Cape Wools has already benefitted from this forum through the exchange of ideas and has promoted ownership of biosecurity by the South African producers for on-farm biosecurity. The MyBiosecurity campaign was subsequently developed and posters distributed across South Africa with the assistance of partnering co-operatives and industry role players.
- **In-bale contamination** has declined markedly since the brokers installed in-line metal detectors and Cape Wools agreed a penalty system for polypropylene contamination.
- **Wool Week Port Elizabeth** was hosted from 29 March to 2 April 2016. This event offered the public the opportunity to meet people in the wool industry, including suppliers and designers. Daily sheepdog shepherding shows, sheep shearing demonstrations and various arts and crafts workshops working with wool proved popular with the public.
- Cape Wools co-funded **17 research projects** conducted at seven research institutions and covering seven broad aspects important in efficient wool production on behalf of the South African wool industry.
- Cape Wools delivered **production advisory services** to all the wool producers of South Africa. It was encouraging to note that the measured average price received by communal farmers (individual producers as well as shearing sheds) reached 68% of the national average price, and the total mass of wool delivered by them to the formal market totalled 4500 tonnes. The assistance of the National Wool Growers Association in delivering these services has made a significant difference.

THE FUTURE

TOPS AND SCOURED WOOL DOMINATE EXPORTS FOR UNILAN.

South American finer wool grades are well known for their whiteness and soft texture, and are in demand by manufacturers of luxury fabrics. The broader wool grades cover a wide spectrum of products, including hosiery, rugs, carpets, upholstery and non-woven goods. The increased interest in South American wool, which is non-mulesed, has added to its popularity with manufacturers of luxury products around the world.

Unilan is one of South America's oldest wool companies and has been exporting greasy wool, scoured and tops since 1953.

"We have come a long way since those early days, and it has not all been easy," says Unilan Managing Director Diego Jones. "There have been many changes to our economy and we have suffered through inflation, devaluation and crises. You name it, we have been through it! But our company is still going strong."

Argentine wool production is currently estimated at 42 000 tonnes, and due to a rise in greasy wool exports wool combers have been forced to reduce production from 100% capacity. "This has been a negative issue faced by other countries around the world and many mills have closed," says Jones. "Nevertheless, we continue to believe



DIEGO JONES, ALAN BIALOBRODA, AMERICO PEZZINI AND GASTON SABAN, THE UNILAN WOOL MANAGEMENT TEAM

in this lovely fibre and we continue to invest in our mill. Last year we installed one of the most modern scouring plants available, updating some of our older machinery. It has been a beneficial investment; we have had some good results, with better productivity and quality as well as a reduction in costs."

"Our company policy is focused on customer service and we offer consistent quality across our product range. We have agents in offices around the world, which enables us to be on the ground and available to our clients

whenever needed. We have a well-defined logistics service and delivering on time is something we take very seriously."

The plant incorporates facilities such as a warehouse for sorting greasy wool and a well-equipped laboratory for raw material processing and quality control.

"We welcome enquiries from companies from around the world that are looking for a reliable supplier of greasy or scoured wool, lanolin and wool tops from Argentina, and we are interested in building long-term relationships with buyers," he says.

Diego Jones can be contacted at jones@unilan.com.ar.

LOOKS BRIGHT



An aerial view of the Unilan top-making plant in Chubut Province, Argentina.

“LAST YEAR WE INSTALLED **ONE OF THE MOST MODERN SCOURING PLANTS AVAILABLE**, UPDATING SOME OF OUR OLDER MACHINERY”



WOOL



EDUCATION

LEADING THE CHARGE IN CHINA

The Woolmark Company is making great inroads into wool education thanks to the establishment of the International Wool Education Centre at Yantai Nanshan University in China in October 2014. It's designed to work in parallel with the Wool Development Centre, set up by The Woolmark Company and the Shandong Nanshan Fabric and Garment Company within the company premises to develop new products for wool. The Woolmark Company supports the Wool Education Centre through provision of staff for teaching and scholarships for students.

The College of Textile Science and Engineering on the Nanshan campus offers a three-year course in textile technology, a four-year course in textile engineering, and courses in fabric and garment design.

The Woolmark Company staff presented the initial course on wool processing technology in English with Chinese interpretation to first- and second-year students. It consisted of six weeks of lectures, tutorials, practical classes and visits to the top-making, spinning, weaving and finishing operations at the Shandong Nanshan Fabric and Garment Company. Since then, they have delivered additional units of the newly developed Woolmark Wool Education Course.

The modules have been developed in collaboration with experts in their field.

THE MODULES HAVE
BEEN DEVELOPED IN
COLLABORATION WITH
EXPERTS IN THEIR FIELD.



Above: Students at Xian University, 2016

Left: Third-year students at Yantai Nanshan University, 2016



PHOTO PREVIOUS SPREAD GETTY IMAGES/GALLO IMAGES
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Where possible, these experts are invited to deliver the units personally. For example, in 2016 the unit on wool scouring was delivered by Dr Jock Christoe (formerly of Commonwealth Scientific and Industrial Research Organisation, or CSIRO) and this year the unit on worsted top-making and spinning will be delivered by Gary Robinson (formerly of CSIRO, too). In addition to delivering the units at Yantai Nanshan University, the experts are normally invited to provide expertise to staff in the Nanshan textile operation. The Woolmark Company provides the funding for such visits.

Staff deliver units in English with Chinese interpretation, using Chinese-language slides.

Staff from the Shandong Nanshan Fabric and Garment Company provide expertise during practical exercises and students receive extensive sets of notes.

After the launch in 2014, it was noted that language was the most significant barrier to delivery of the units. In response, the university increased the number of English language lessons required by textile students and is encouraging the students to attempt examinations run by the International English Language Testing System. The Woolmark Company has offered on-going assistance to selected third-year students to improve their English language skills. The English skills of the

third-year textile students have improved to the point where, in 2016, tutorials for third-year classes were held without interpreters.

Since the foundation of the International Wool Education Centre, Yantai Nanshan University has reported an increase in the number of students meeting the Chinese requirements of further education at master's level and, in 2017, it is hoped that one student will qualify for postgraduate education at Deakin University. The Woolmark Company and the Nanshan Group will support him or her. Furthermore, over the next few years, Yantai Nanshan University is hoping to develop a wool research unit.

FLYING THE FLAG IN ITALY



MARCO VESIPA, MARTA FEDERICA MANIERO, MADDALENA COZZI, TUTOR GIOVANNI SCHIAPARELLI, MARTA LAURO AND ROBERTA ZUARINA ACCARDI

The Biella Master delle Fibre Nobili was founded by Italian textile entrepreneur Luciano Barbera 30 years ago. A 13-month postgraduate course that combines theoretical training with internships at Italian and foreign companies, the course was designed to attract educated young people to the Italian textile industry.

"Our goal," says Barbera, "is to train future managers so they can continue to spread the 'Made in Italy' textile culture around the world."

**"IT WAS AN
INCREDIBLE
OPPORTUNITY
TO ATTEND
THE IWTO
ROUND TABLE"**

Last year, the five students in the programme, Marta Federica Maniero, Maddalena Cozzi, Roberta Zuarina Accardi, Marta Lauro and Marco Vesipa, had the opportunity to attend the two-day IWTO All Wool Supply Chain Round Table 2016 in Biella, northern Italy.

Below is an extract from a blog entry written by Marta Maniero:

"Every year, the IWTO organises a Round Table to

discuss issues pertaining to the wool industry. On 28 and 29 November we had the chance to take part in this event, held in Città Studi di Biella.

"On the first day, the discussion was about graduate and postgraduate courses related to textiles, what companies are looking for, and the importance of university research for driving innovation.

"The speakers were professors and researchers from top universities, such as Prof Giorgio Rovero (Politecnico di Torino, Italy), Prof Ellen Bendt (Hochschule Niederrhein University of Applied Sciences, Germany), Dr Beverley Henry (Queensland University of Technology, Australia), Prof Sandra Heffernan (School of Design, University of New Zealand) and Prof Paul Kiekens (University of Ghent, Belgium).

"One of the highlights of the event was the presentation by Emily King of Australian Wool Innovation (AWI) about education and training projects sponsored by Woolmark and AWI.

"The second day was focused on the latest industry trends in retail, with talks by Prisca Rolando, Product Manager of Lanieri; and Lorenzo Dovesi, COO of Benetton Group. Furthermore, Head of CSR and Sustainability of European Outdoor Group Pamela Ravasio spoke about raising awareness regarding 'no mulesing' wool.

"It was an incredible opportunity to attend the IWTO Round Table. We got to listen to different points of view about critical issues affecting the wool market, and to recognise the importance of putting ideas and opinions of different market players together to solve the problems and achieve shared goals.

"We would like to thank International Wool Textile Organisation for hosting us during these highly informative days."

• www.biellamasterblog.com





"OUR GOAL IS TO TRAIN FUTURE MANAGERS SO THEY
CAN CONTINUE TO SPREAD **THE 'MADE IN ITALY'**
TEXTILE CULTURE AROUND THE WORLD"

WHERE TO FOR WOOL?

LOOKING AHEAD TO 2017 AND BEYOND...



CHRIS WILCOX
EXECUTIVE DIRECTOR OF
THE NATIONAL COUNCIL
OF WOOL SELLING
BROKERS OF AUSTRALIA

AS 2016 drew to a close, consumer confidence in the US was at its highest level in more than nine years and consumer confidence in the EU was at near nine-year highs, yet retail sales of clothing could best be described as lacklustre in most of the major wool-consuming countries.

Exports of wool products were weak in China, yet had improved in other countries. Raw wool purchases by China slumped in the first three-quarters of 2016, but they soared in Europe. Prices for fine and superfine wool surged in euro, US dollar and local-grower currency terms, yet crossbred-wool prices were in the doldrums. World wool production remained near 70-year lows. Meanwhile, high merino wool prices and good to excellent seasonal conditions in some major producing countries means production may start to recover.

At the same time, voters in Europe and the US seemed to have become disillusioned by the political establishment, resulting in surprise outcomes in elections in the US and in referendums in the UK and, to some extent, Italy.

So where will 2017 take the global wool industry? It appears that two key factors will dominate the direction of the global wool industry this year.

Risks and uncertainties affecting the global economy

Brexit will affect the UK and the Euro-zone countries, but we don't know to what degree. The policies pursued by US President Donald Trump will also have a significant impact. Will inflation be reignited, bringing higher interest rates? How will the trade relationship between the US and China play out? There is little clarity yet on these and other policy questions.



The recent referendum vote in Italy rejecting the proposed political reforms may ultimately bring increased pressure on the Italian banking system and poses a risk, albeit relatively small, of having a knock-on effect through other countries in Europe.

There are also the questions about China's economy and its transition to a more mature economy based on domestic consumption and services. The most significant risk is the potential restriction on credit availability, although there are major positives for wool with the Chinese economy moving to growth based on domestic consumption.

Supply will influence the market

World wool production remains at low levels and raw wool stocks are generally low. This compares with excess global stocks of cotton and excess production capacity in man-made fibre, notably polyester.

There are signs that wool production in some important countries could start to lift. The key, at least for wool used in apparel, will be Australia. With higher merino wool prices, growers may start to rebuild flocks and lift production from the current 90-year lows.

In contrast, production of crossbred and broader wool may be under pressure due to low prices and demand.

Despite all the risks and uncertainties, the latest forecasts of economic growth in the major wool-consuming countries point to a relatively steady, if subdued, period of economic growth through 2017. This is positive for wool, which relies more and more on premium consumers of wool products.

Much can, of course, happen to derail such a benign outlook. There is also a chance that world economic growth could be significantly better than the forecast. Continued high consumer confidence levels in key countries may result in increased retail sales.

For the moment I am optimistic that, on balance, there will be improved demand for wool products at retail.

BEYOND 2017

The challenge for all in the wool industry in the years ahead will be to ensure that wool competes based on value rather than volume. It will be important to defend and retain wool's presence in the core products of men's businesswear, women's overcoats, tufted and woven carpets and rugs, and knitwear. We will also need to secure growth in active leisurewear and regain presence in womenswear.

URUGUAY NATURAL COUNTRY



- Excellent weather
- Best animal welfare and land management

- Non mulesing wool production



- Non polluting industry and clean and renewable energy



- Uruguay fully respects the workers rights and it is member of *International Labour Organization (ILO)*

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