AUTUMN 2026



Natural Fibres INSIGHT

Sun sets on greenwashing

New dawn for natural fibres?

PUBLISHED BY **APPAREL INSIDER**

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Editorial



We have argued for years that the textile industry needs tougher rules on green claims in order to ensure a level playing field. For far too long, vague language and cherry-picked data have let almost anything get called sustainable. This is still happening in some quarters, although the authorities and advertising watchdogs are clamping down. This is a welcome development. Bogus claims confuse shoppers and punish the companies actually investing in better production and real evidence.

The EU's Empowering Consumers for the Green Transition Directive should help this process. As OEKO-TEX explains (pages 14-15) in this issue, generic environmental claims will be much harder to defend moving forwards, while independent certification and specific, verifiable information will carry more weight.

This potentially presents a real opening for natural fibres.

Cotton, wool, hemp and the rest have a strong story. They're renewable, their carbon is biogenic rather than fossil-derived, and many biodegrade under the right conditions.

These are all huge positives but claims around natural fibres will still require robust support. How was the fibre grown or produced, where did it come from, how long will the product stay in use, and what happens to it afterwards?

A few articles in this issue dig into that evidence base. Oritain (page 19) looks at why origin verification matters more now than ever. Textile Exchange (pages 16-17) explains how its new Materials Matter Standard will treat wool, mohair and alpaca. The International Wool Textile Organisation (page 7) covers the emerging (and fascinating) debate over biogenic carbon.

We also look at what natural fibres need to do to gain ground in performance apparel, a category still dominated by fossil-based synthetics.

There is perhaps a paradox in all of this. Just as regulatory winds appear to shift in favour of natural fibres, latest figures from the Discover Natural Fibres Initiative (pages 32-33) show global natural fibre production hasn't meaningfully grown in 20 years. Natural fibres made up only 25.9 per cent of total fibre output in 2025; polyester alone took 56 per cent.

Wool's position is particularly noteworthy. Clean wool production dropped below one million tonnes in 2025 - the lowest since the 1940s - and another decline is forecast for this year. Farmers keep shifting to meat breeds, beef or cropping because wool too often doesn't pay enough.

Is this a short term blip, driven by weak prices and shaky demand? Or is it a longer trend, as structural capacity for cheap synthetic fibres keeps expanding?

Stronger green-claims rules could shift that trajectory, but only if natural fibre producers actually use them. This means investing in verification, communicating their strengths honestly, and making sure enough value flows back to the people growing the fibre.

None of which is cheap, it has to be acknowledged. Brands, surely, need to step up and support this process by investing in natural fibres supply chains.

Use them – invest in them! – or lose them.

Finally, this issue comes shortly after the death of Peter Ackroyd MBE, chairman of the Campaign for Wool. I met Peter a few times and found him a genuinely lovely man - warm, generous, excellent company.

For the industry, his loss is enormous. He was a brilliant ambassador for wool, with a deep understanding of the trade and an international network built over five decades. He'll be greatly missed.



Brett Mathews
Editor

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Latest natural fibre statistics from the DNFI

GRTS: a broader standard for textiles

STUTTGART – Global Standards, the nonprofit behind the Global Organic Textile Standard (GOTS), has introduced GRTS, a new standard for the processing of fibres certified to defined Responsible Fibre Standards.

The standard covers a broad range of plant, animal, synthetic, man-made cellulosic and recycled fibres, providing a new certification route for brands, mills, manufacturers and sourcing teams across the textile industry.

GRTS is a new processing standard that can apply to a broad range of fibres certified to third-party Responsible Fibre Standards. It brings credible environmental and social requirements across the textile supply chain and has been designed to complement the established GOTS framework.

For businesses, one of the main benefits is the ability to certify more of their fibre portfolio. GRTS covers eligible textiles made with certified plant, animal, synthetic, man-made cellulosic and recycled fibres, providing a certification route for products that fall outside the organic fibre scope of GOTS.

The standard also places a strong emphasis on supply chain visibility. GRTS combines independent third-party certification with traceability, transaction verification and due diligence requirements across the entire textile supply chain.

It also builds on an established certification system. GRTS uses the 'gold-standard' certification infrastructure and many of the core requirements already established through GOTS. For GOTS-certified companies, certification activities can be aligned with existing systems and audit cycles, helping to reduce duplication and administrative effort.

GRTS has also been designed for global implementation. The first textile manufacturers in India and Türkiye have already achieved GRTS certification, setting a basis for the growth of the new standard across international textile supply chains.

Certification is available through a global network of 27 independent approved certification bodies, including 13 approved to operate in the United States.

For companies looking to understand what GRTS could mean for their business, further information is available from Global Standards.



ALLIED cuts down processing emissions by 85 per cent

MONTEBELLO - ALLIED Feather + Down says the processing footprint of down produced at its Hangzhou facility in China is around 85 per cent lower than an estimated industry average. This follows a carbon audit carried out by Green Threads DPP.

The assessment calculated emissions of 0.48kg CO2e for every kilogram of down processed by ALLIED. That compares with an estimated 3.2kg CO2e per kilogram for conventional down processing and 1.14kg CO2e per kilogram for recycled down.

On that basis, ALLIED says its processing footprint is 85 per cent below the conventional down estimate and 57.9 per cent below the recycled down figure.

The audit covered impacts associated with the slaughterhouse, transportation and processing at ALLIED's Hangzhou plant. It used annual data covering energy, water, wastewater and detergent consumption.



The 0.48kg figure does not include the environmental impact of raising the birds.

ALLIED says this makes a direct comparison with the Product Environmental Footprint (PEF) database figure of 4.15kg CO2e per kilogram of virgin down inappropriate without adjustment. An International Down and Feather Bureau life cycle assessment estimates bird-rearing accounts for around 23 per cent of that total. Removing this element produces the 3.2kg CO2e figure ALLIED uses as its processing-industry benchmark.

The company also compared its result with polyester fibres used in synthetic insulation and said its down processing footprint was around 95 per cent lower. However, that comparison is again based on specific system boundaries. The polyester data is drawn from ecoinvent 3.12 and does not include upstream impacts from petroleum extraction and refining, while ALLIED's down figure excludes bird-rearing.

ALLIED said reductions at Hangzhou have been driven by investment in water and energy efficiency. The factory operates an on-site water reclamation system which allows around 95 per cent of its water to be reused, with the remainder largely lost through evaporation.

Biogenic carbon, wool and the changing material conversation



By **International Wool Textile Organisation**

Every textile fibre contains carbon, but fashion and textile brands are increasingly asking: where did it come from?

Some fibres are made from fossil carbon. Polyester and acrylic for example are made from feedstocks derived from the coal, oil, and gas reserves stored underground for millions of years. Other fibres contain biogenic carbon, the carbon recently drawn from the atmosphere by plants.

In the case of wool (and other animal fibres), the plant carbon has been transformed by the sheep (or another animal) into a protein fibre.

This distinction does not make any material automatically climate neutral or lower impact. No one gets a free ride. However, science, policy, and industry are beginning to look more closely at where the carbon in products comes from, and where it goes.

This shift signals a new understanding.

For years, the climate discussion in fashion has focused on the quantity of emissions a product creates. That remains important, but there is growing recognition that we should also consider whether carbon originates in contemporary biological systems or in fossil reserves.

The European Commission's 2025 Bioeconomy Strategy reflects this direction, aiming to replace fossil-based resources with sustainable biological ones and naming bio-based materials, including fibres and textiles, as potential lead markets.

Separately, the European Commission's Joint Research Centre, reviewing the Environmental Footprint methods used to assess products, has proposed clearer reporting on whether a product's carbon is biogenic, fossil-derived, or captured from the air.

Neither is final, but both signal the same direction: carbon origin is becoming relevant.

Wool and the carbon cycle

A fibre retains its carbon while it stays in use, so product life is an important metric. Care, repair, resale, and recycling extend a fibre's value and reduce the need for replacements. At end of life, wool's carbon eventually returns to the environment. In comparison, fossil-derived fibres bring previously stored carbon into the active cycle.

Wool's carbon story does not begin and end in the fibre. Wool-growing landscapes hold carbon in pasture, trees, vegetation, and soils. Farmers can retain and, in some cases, increase stored carbon by planting trees, improving ground cover and managing grazing. These activities give brands a way to engage suppliers on outcomes beyond fibre volume.

Carbon storage is not automatic, though. How much is stored, and whether it increases over time, depends on location, soil, rainfall, starting condition, management and duration. Claims about farm carbon storage depend on verifiable, farm-specific evidence. The mere fact of a grazing system isn't enough.

What matters: material choices

The shift towards greater recognition of carbon origin gives us a more useful way to think about material choices. It raises real questions: is a fibre's carbon biological or fossil-derived? What is happening in the landscape it comes from? Is the material designed for a long life? What evidence backs claims made about it?

For wool, the starting point is straightforward. Wool's fibre carbon is drawn from a renewable biological system rather than fossil feedstocks. While that does not remove the need to reduce impacts across the value chain, it does give a broader basis for understanding materials.

For a deeper dive into how wool and other natural fibres interact with the contemporary carbon cycle, the International Wool Textile Organisation offers its new Green Book, free to download at iwto.org/resources/greenbook

Cotton textile waste can be turned into biogas, study finds



AUCKLAND - Researchers in New Zealand have found that cotton textile waste can be broken down to produce biogas. The findings raise the prospect of another end-of-life route for natural-fibre clothing that cannot be reused or recycled.

The University of Auckland study tested cotton, wool and polyester-cotton blends using anaerobic digestion. This is a process already widely used to treat food waste, farm waste and sewage sludge.

In commercial systems, organic material is broken down in sealed tanks without oxygen, producing methane-rich biogas that can be used to generate heat and electricity or upgraded for use in the gas grid.

The researchers wanted to see whether cotton textiles could be treated in a similar way. Pure cotton produced around 103 ml of methane per gram of volatile solids under the best conditions tested, with estimated biodegradability of 25.8 per cent.

The highest methane yield came from a mix of six parts cotton to one part wool, which produced around 130 ml/g VS.

A separate mixture of cotton and food waste also generated methane, producing around 111 ml/g VS.

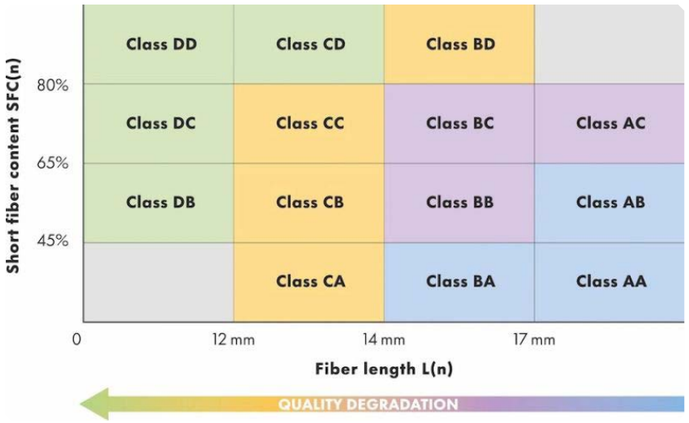
However, polyester proved much more difficult. Tests on polycotton showed that the cotton part of the fabric degraded during treatment while the polyester remained largely unchanged.

Microscopic analysis after digestion showed extensive breakdown of the cotton fibres, with the synthetic material left behind.

The researchers also found that the presence of polyester reduced the overall performance of the digestion process compared with pure cotton.

The findings suggest that anaerobic digestion could eventually offer an outlet for some low-grade cotton textile waste that is unsuitable for reuse or fibre-to-fibre recycling.

New system grades recycled cotton fibres



USTER – Textile technology specialist Uster has developed a new assessment system which gives an A to D grading for recycled cotton fibres. The tool is designed to help recyclers, spinners and brands determine how mechanically recycled cotton can be used in yarn production.

The Uster Recycled Fiber Matrix grades recycled cotton fibres according to their physical characteristics and likely processing performance.

It was developed using measurements from mechanically recycled cotton samples sourced from China, India and Europe. The material tested included greige, coloured and bleached fibres originating from post-industrial, pre-consumer and post-consumer textile waste.

Recycled cotton can be difficult to categorise because its quality and consistency vary considerably, and average fibre length alone does not provide enough information to predict how a batch will perform during spinning.

The company's matrix therefore combines two measurements, these being mean fibre length and short-fibre content or nep count. This allows fibre lots with similar average lengths but different processing characteristics to be distinguished.

Data used in the matrix was generated using the Uster AFIS 6 fibre-testing system. Measurements include average fibre length, the length of the longest five per cent of fibres and the proportion of short fibres.

The results can then be used to guide bale management, machine settings and blending ratios.

Spinners can also use the classifications to estimate the likely short-fibre load and make adjustments to drafting, twist and spinning speed.

In theory, separating recycled cotton bales according to fibre length, source and colour could reduce variability and improve yarn consistency.

Typically, blending recycled cotton with virgin cotton or manufactured fibres remains the most common way of compensating for quality limitations.

Uster says it is now working to establish benchmarks showing how different recycled-content levels affect yarn performance.

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Biochar boosts cotton yields under drought in US trial

A two-year field study in New Mexico found that a single biochar application increased estimated seed-cotton yields by 18.3 per cent in the first year and 8.4 per cent in the second, with little effect on fibre quality

LAS CRUCES - A single application of biochar increased cotton yields under drought stress in a two-year US field trial, raising the possibility that the soil amendment could help growers maintain production in water-limited regions.

The study, published in Agronomy, found that applying 12.5 tonnes of biochar per hectare produced the highest estimated seed-cotton yields in both years. Yields were 18.3 per cent higher than untreated plots in 2024 and 8.4 per cent higher in 2025.

The researchers also found little or no effect on fibre quality, an important consideration for growers seeking to improve drought resilience without compromising cotton quality.

The work was carried out at New Mexico State University's Leyendecker Plant Science Research Center in Las Cruces, with researchers from New Mexico State University, Texas A&M University, Auburn University and the US Department of Agriculture.

Biochar is a carbon-rich material produced by heating biomass in a low-oxygen environment. It is being investigated as a soil amendment because of its potential to improve water retention and nutrient availability.

For this trial, the researchers used biochar made from southern yellow pine. It was applied once, at the beginning of the study, at rates of zero, 6.25, 12.5 and 25 tonnes per hectare. The same plots were then used in 2025 without further biochar application.

Six cotton genotypes were tested in the first year and three in the second. The experiments were conducted on clay loam soil under drought-stressed conditions, with irrigation withheld at key stages to create water deficits.

Soil moisture measurements showed that the two higher biochar rates improved water retention. Moisture content was 17.2 per cent in untreated plots, compared with 20.8 per cent at 12.5 tonnes per hectare and 21.8 per cent at 25 tonnes per hectare.

However, the highest application rate did not produce the best yield. The 12.5-tonne treatment performed best in both years, suggesting that more biochar does not necessarily translate into greater productivity.

The researchers also examined estimated lint yield, the measure more directly relevant to the textile supply chain. At the 12.5-tonne rate, lint yield increased by 15.9 per cent in 2024 and 7.3 per cent in 2025 compared with untreated plots, although the second-year difference was not statistically significant.



Fibre length, uniformity and strength were not significantly affected by biochar treatment. There were some differences in elongation and micronaire at particular application rates, but the overall findings suggest that the yield benefits were achieved without a substantial change in fibre quality.

Despite the positive yield results, there were also complications. In the first year, biochar-treated plots experienced greater groundcherry weed infestation and reduced cotton seedling growth. These effects were not observed in the second year, and the researchers could not establish whether the poorer early growth was caused by weed competition or biochar itself.

Biochar can be expensive to produce and apply, and the researchers note that annual applications are not currently economically feasible in the US. A longer-lasting yield benefit would therefore be important to its commercial adoption.

The researchers conclude that further studies are needed to determine whether the benefits persist into a third year and whether the additional cotton produced can justify the initial investment.

Michell Legacy: Towards 100 years of Leadership in Alpaca and Natural Fibres



With 95 years of expertise and innovation in the processing of Alpaca fibre, Michell & Co. stands as a pioneer and world-leading producer and exporter of Alpaca tops and yarns.

Headquartered in Arequipa, Peru, Michell is a vertically integrated company whose operations encompass the entire production chain - from animal breading, fibre sorting, scouring, carding and combing to worsted spinning and the dyeing of both classic and fancy yarns. With a monthly production capacity of 250 tons of yarn, ranging from 0.4Nm to 120Nm, Michell proudly presented its A/W 27–28 Collection during Pitti Filati 99, held in Florence last June.

At the core of Michell's vision is the commitment to building a balanced and sustainable ecosystem where economic growth is aligned with strong anti-corruption principles, environmental stewardship, biodiversity preservation, and the conscientious use of natural resources. Equally important is the company's social commitment, reflected in its close collaboration with local communities and the implementation of responsible employment practices throughout its workforce.

As the company approaches its 100th anniversary in 2031, Michell has launched "Michell 100", a long-term strategic programme designed to align the company's operations and policies with the United Nations Sustainable Development Goals. The initiative prioritises key pillars such as gender equality, responsible water and energy management, carbon footprint reduction, and improved access to education through Michell's social development programs.

The inspiration behind the Michell A/W 27–28 Yarn Collection is deeply rooted in the company's Andean heritage. Through this collection, Michell seeks to share the richness of its history, culture, textile traditions, and the exceptional qualities of noble natural fibres, led by the luxurious Alpaca.

Across all product lines, Michell offers an extensive range of classic and fancy yarns in contemporary colour palettes, featuring solid shades, heathers, melanges, colour injections, and hand-painted effects inspired by the vibrant tones of Peru's cultural heritage.

The passion for working with Alpaca, combined with state-of-the-art technology and the creativity of Michell's R&D team, enables the development of highly specialised and bespoke yarns. The new Michell Yarn Collection showcases luxurious natural fibre yarns designed to meet a wide variety of applications, including machine knitting, hand knitting, weaving, hosiery, upholstery, sock manufacturing, and circular knitting.

Innovation continues to be one of Michell's main drivers.

As part of this commitment, the company has developed "EasyWash Alpaca," an innovative washable Alpaca yarn created through an environmentally friendly enzyme-based process.

In parallel, Michell's traceability system across the entire alpaca value chain enables complete transparency - from the breeding of the animals to the finished product. These initiatives have supported compliance with some of the industry's most demanding international certifications, including Global Organic Textile Standard (GOTS), OEKO-TEX, Responsible Animal Fiber Certification (RAF), Fair Trade Peru, Interwoollabs, and Business Alliance for Secure Commerce (BASC).

Aligned with these achievements, Michell's Sorani Farm stands out as the only farm in the world to offer certified organic Alpaca fibre.

We invite you to discover the many exciting initiatives and innovations Michell has prepared as it advances toward a century of leadership in the Alpaca and natural fibres industries.

For more information,

visit the official Michell & Co. website www.michell.com.pe or find them on LinkedIn as Michell y Cia S.A and Instagram as @michell_alpaca

How cellulose is moving into high-performance textiles

From merino running shoes and hemp training tops to a new generation of wood-derived fibres, natural materials are pushing further into a sportswear market long dominated by synthetics. NFI speaks with Regina Goller, head of material strategy & future trends at Performance Days, about how far cellulose can realistically go.

MUNICH - For much of the modern sportswear era, performance has been pretty much synonymous with synthetics. Polyester and nylon have offered designers an attractive combination of strength, durability, rapid drying and the ability to engineer stretch, water resistance and various other functions into a garment. Natural fibres, by contrast, have often been associated more readily with comfort and fashion than with technical performance.

In recent years, that picture has begun to change.

Merino wool is already well established in base layers, running, hiking and other outdoor applications. However, newer spinning and fabric technologies are opening up fresh opportunities.

New Zealand-developed Nuyarn, for instance, uses a twist-free spinning process designed to retain more of wool's natural loft and elasticity. Outdoor brand Ibex has incorporated the technology into performance base layers, while Nuyarn has also appeared in products from brands including Artilect, TREW and Pinebury.

Natural fibres are also increasingly appearing in unlikely places. French brand Circle Sportswear's SuperNatural Runner (pictured) uses a ProWeave upper made from 50 per cent Woolmark-certified wool and 50 per cent Tencel Luxe derived from wood. Circle says the shoe is 75 per cent bio-based overall, with the wool/Tencel construction intended to deliver breathability and thermoregulation while also meeting the durability requirements of a running shoe.



Meanwhile, running brand Ciele Athletics is selling a technical running T-shirt made from a 70 per cent organic cotton and 30 per cent hemp knit. The company says the fabric offers a natural alternative for moisture management and breathability.

Cellulosic fibres are also moving into more engineered constructions. Lenzing and OceanSafe, for example, have developed a performance yarn combining Tencel Lyocell A100 with a co-polyester, using it in a sportswear capsule encompassing yoga wear, athleisure T-shirts and fleece jackets. The concept shows how new solutions are not necessarily eliminating synthetics, but they are using cellulosics to reduce reliance on them (while retaining required performance characteristics).

The science also suggests the move to cellulosic fibres in performance-wear offers many potential practical benefits.

A 2025 study published in Textile Research Journal compared merino wool, polyester, cotton and viscose under dynamic conditions intended to replicate periods of physical activity and recovery. Polyester recorded the highest heat-loss rate during the activity phase, supporting its ability to deliver cooling and moisture management. Merino, however, maintained a more stable microclimate as conditions changed.

The researchers argued that real-world activewear performance therefore needs to be assessed dynamically rather than through a single measure such as drying speed.

While polyester and nylon are clearly not about to disappear from technical clothing – cost will remain the main driver, without doubt - advances in yarn spinning, fabric construction and finishing are widening the range of applications in which natural and regenerated fibres can compete.

It is against this background that Performance Days is launching a dedicated Cellulose Forum at its Munich edition, starting at the October 2026 event. The curated area will feature materials containing at least 50 per cent cellulose, spanning cotton, hemp and linen through to lyocell, viscose, acetate, hybrids and next-generation developments.

NFI recently spoke with Regina Goller, head of material strategy & future trends at Performance Days, about what has changed, where cellulosics can genuinely compete with synthetics and what still stands in the way of wider adoption.

NFI: What has changed technologically to make cellulose a serious option for performance textiles?

Regina Goller: In the past, man-made cellulosic fibres, cotton, hemp and other cellulosic fibres were used almost exclusively in fashion and were only rarely considered for performance applications. That is changing significantly.

Advances in fibre processing, spinning and fabric construction are an important part of this, combined with the right finishes and treatments, which themselves are becoming increasingly bio-based.

Used either on their own or in carefully engineered blends, MMCFs and natural cellulosic fibres can now deliver performance properties that make them viable alternatives to synthetics in a growing number of applications.

Where are cellulosic materials already particularly strong?

Next-to-skin comfort is one of their biggest strengths. Cellulosic fibres naturally absorb moisture and release it gradually, which can provide a pleasant cooling effect, particularly in warmer conditions.

Fibres such as hemp and linen also bring useful inherent properties, including odour management.

There are still areas, however, where synthetics have a clear advantage. Combining extreme fineness with high strength and durability remains difficult to match with cellulose. Water repellency is also generally easier to achieve with synthetic fibres because of their naturally hydrophobic characteristics.

What are some of the most interesting developments now coming through?

One particularly exciting area is the development of MMCFs using alternative feedstocks.

Alongside work to improve the cultivation and sourcing of conventional plant-based fibres, we are seeing development involving recycled textiles, agricultural residues and waste streams from areas such as fruit processing. There is also experimentation with some much more unconventional waste-derived inputs.

Another very interesting development is the incorporation of functional ingredients or particular performance properties directly during the fibre-spinning process.

At the same time, new spinning technologies are allowing natural fibres to be given improved elasticity or other specific functional characteristics. It is the combination of fibre innovation and processing technology that is really expanding what these materials can do.

These are exactly the kinds of developments we want to bring together at the Cellulose Forum.

Performance textiles often depend heavily on synthetics and chemical finishes. How far can the industry realistically move towards predominantly natural products?

Synthetic fibres will not disappear. They will continue to be important for applications where very specific levels of technical performance are required.

At the same time, the industry is clearly moving towards more sustainable, natural and nature-based material solutions, and that will continue to drive innovation in cellulosic fibres and the way they are processed.

As their performance capabilities improve, I expect them to replace a significant proportion of synthetic fibres in applications where the required functionality can be achieved without compromising the performance of the finished product.

Are brands actually asking suppliers for more of these materials?

Yes. Demand for natural and nature-based fibres is steadily increasing across brands. There are different speeds of adoption. Some companies are still taking a fairly cautious approach, while others are actively directing material development towards these alternatives.

Sustainability targets and new regulatory requirements are obviously important drivers, but there is also a wider change taking place around health, wellbeing and more conscious consumption.

Consumers are interested not only in what a product does, but increasingly in what it is made from and how that material feels against the body.

"Consumers are interested not only in what a product does, but increasingly in what it is made from and how that material feels against the body"

What is stopping adoption moving faster?

Price and availability remain significant barriers, particularly in the current economic environment. Cost pressure has a major influence on material decisions. The challenge is therefore not simply to invent a new fibre or fabric. It is to bring these innovations to sufficient scale and to reach a price point at which they can compete across the broader performance market.

Looking five to ten years ahead, how much further could cellulose go?

Polyester and nylon will certainly still be produced and widely used five or ten years from now.

But there is already significant research and development taking place around bio-based alternatives to conventional synthetics, and I think we will see many more intelligent blends combining cellulosic fibres with other bio-based materials.

Those combinations could increasingly replace products that currently rely completely on synthetic fibres.

For the most technical applications, particularly workwear, protective clothing and other products with very demanding performance requirements, change is likely to take longer. In those areas the technical bar is extremely high.



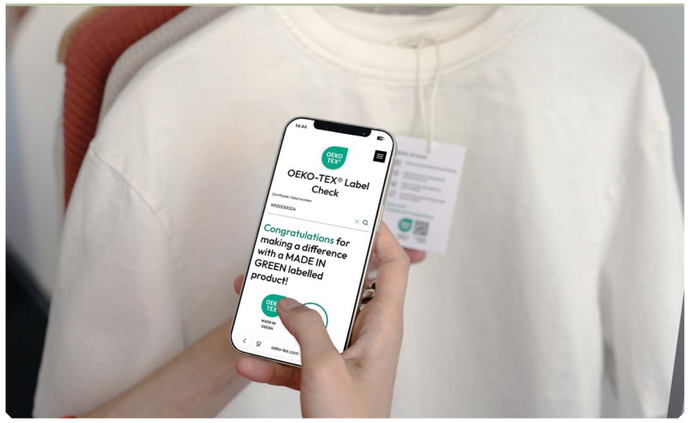
OEKO-TEX on the future of credible certification

As the textile industry prepares for closer scrutiny of its sustainability claims, Natural Fibres Insight (NFI) speaks with OEKO-TEX® CEO Dr. Alfred J. Beerli about the EU's Empowering Consumers for the Green Transition Directive (EmpCo), the importance of independent certification and how brands can communicate their environmental credentials with clarity and confidence

NFI: For readers who are not familiar with EmpCO, what are the most important changes it introduces for sustainability claims in the textile and apparel sector, and what should companies be doing now to prepare?
Dr Beerli: The EU Directive on Empowering Consumers for the Green Transition (EmpCo, EU 2024/825) tightens the rules on environmental claims to stop greenwashing. From 27 September 2026, any sustainability label used in the EU must be issued by a certification scheme whose requirements are checked by an independent third party. Furthermore, generic environmental claims (e.g. any claim such as "green," "eco-friendly," "climate friendly," etc.) made by traders that are not based on a sustainability label and for which the trader is not able to demonstrate recognised excellent environmental performance relevant to the claim, will no longer hold up legally.
Companies should audit every sustainability claim and label in use, checking whether it rests on independent certification rather than supplier assurance, and confirm certification providers have institutionally separated standard setting from conformity assessment. They should also review marketing copy, hangtags and product pages for unverifiable green language so legal readiness is in place before national implementing laws take effect.

NFI: The Directive places greater emphasis on credible sustainability labels and independent verification. What does this mean in practice, and how does OEKO-TEX®'s approach to testing and certification help companies meet these expectations?
Dr Beerli: As stated above, generic claims without substantiation, self-declared eco-labels and vague environmental wording will no longer hold up in practice, since they no longer have any legal standing.
What works against this is specificity, backed by proof. Do not say "sustainable." Specify what was tested, against which standard and who checked it independently. That is a claim nobody can credibly challenge it is a documented result, providing clear, relevant and reliable information.
We built our whole system around this idea long before it had a regulatory name: complete product certification, not mere claims about components of the product, because a garment is only as safe as its least-tested component. Brands and manufacturers that adopt that same discipline, providing a tested claim based on evidence through independent verification, need not fear scrutiny. They have already done the work regulators are now asking for.

> "We built our whole system around this idea long before it had a regulatory name: complete product certification, not mere claims about components of the product, because a garment is only as safe as its least-tested component"



NFI: OEKO-TEX® recently announced changes to its governance in preparation for EmpCo. What has changed, why were these changes necessary, and what reassurance can you give companies that rely on OEKO-TEX® labels?
Dr Beerli: OEKO-TEX® has used the arrival of EmpCo as an opportunity to further develop its governance structure. In doing so, it not only meets the requirements of the Directive but also positions itself for future regulatory developments, meaning the relevant OEKO-TEX® labels remain legally compliant beyond the entry into force of national implementing legislation.
The reasoning is straightforward: trust must be built into the structure itself. OEKO-TEX® always has separated standard setting from conformity assessment, with inputs from industry experts. To strengthen this system, OEKO-TEX® has made structural changes to institutionalise this and has put an Independence Council and a whistleblowing system in place as additional safeguards. None of this changes what customers experience day to day. Testing, auditing and certification continue exactly as before. What changes is that this independence can now be verified by anyone. For a certification scheme it is precisely this institutional separation that gives its labels credibility.
For companies relying on OEKO-TEX® labels, the reassurance is that less changes than people might assume. EmpCo is one clear signal among many that independent third-party verification is becoming the baseline everywhere, not a nice-to-have.
OEKO-TEX® is taking this as an opportunity to further develop its governance so that compliance is demonstrable, proactively and forward-looking.

NFI: OEKO-TEX® offers several different standards and labels. How should a company decide which are relevant to the claims it wants to make, and what is the difference between demonstrating product safety, responsible production and supply chain traceability?
Dr Beerli: A company should not start from the claims it wants to make, but from which certifications and product labels are relevant to its own articles.
OEKO-TEX® STANDARD 100 and OEKO-TEX® LEATHER STANDARD provide product safety. This means the certified article is harmless to human health. Both certifications test every component, including the outer fabric, sewing threads, buttons and zips, against a list of over 1,000 harmful substances, with limit values reviewed and updated annually.
OEKO-TEX® MADE IN GREEN and OEKO-TEX® ORGANIC COTTON combine product safety and responsible production with added supply chain traceability. OEKO-TEX® MADE IN GREEN uses a unique product ID or QR code, through which end consumers can find out about the production facilities behind a textile or leather article, the production stage each facility was involved in, and which countries the manufacturing took place in. OEKO-TEX® ORGANIC COTTON tracks the product chain via a digital traceability platform using token-based Fibercoin™ technology, which links every physical delivery of organic cotton to a unique digital token within a closed system. This enables transparent, tamper-proof traceability from fibre to finished product.
OEKO-TEX® ECO PASSPORT and OEKO-TEX® STeP are certifications within the supply chain that stand for responsible production. OEKO-TEX® ECO PASSPORT is aimed at manufacturers and distributors of chemicals used in the textile and leather industry, certifying chemicals, colourants and auxiliaries in line with international requirements and regulations to reduce environmental impact. OEKO-TEX® STeP certifies production facilities at every stage along the textile and leather production chain, as well as large-scale laundries, covering environmental and chemical management, social responsibility, fair working conditions, and health and safety. The aim is to increase efficiency and drive continuous improvement in production processes and resource use.

NFI: What practical support is OEKO-TEX® providing to brands, manufacturers and retailers as they review their claims, packaging and product information? Are there particular mistakes or misunderstandings you are seeing that companies should be aware of?
Dr Beerli: Uncertainty is a challenge. Brands have done real work on sustainability, and they want to tell people about it, but they are no longer sure what they are allowed to say. The fear of getting the wording wrong has made some of them go quiet, which helps nobody, especially the consumer. Companies relying on OEKO-TEX® labels are legally compliant.
That part is taken care of. Their claim already sits on an independently verified certification scheme, which is precisely what the EmpCo Directive asks for.



NFI: Looking beyond the immediate compliance deadline, do you expect EmpCo to change the way textile companies collect evidence and communicate with consumers? Where do you see the greatest opportunity for OEKO-TEX® to help the industry build more credible and useful sustainability information?
Dr Beerli: We expect to move into a period where generic sustainability language disappears and specified, verifiable claims take its place, often supported by sustainability labels based on certification schemes. That is a healthy shift for everyone in the supply chain, not just for brands facing European regulators.
Our governance changes are designed to make sure that when a manufacturer or brand anywhere in the world uses an OEKO-TEX® label, that claim stands on its own, independently verified, transparently structured and ready for scrutiny. This is where we see the greatest opportunity to help the industry: not by encouraging companies to talk less about their progress, but by giving them the evidence base to prove more and then say so with confidence.

Can Materials Matter deliver for natural fibres?

As Textile Exchange prepares to move to its new Materials Matter Standard, NFI spoke to Gweneth Langdon, senior director of standards, about what it means for natural fibres, certification costs, auditing, measurable outcomes and the continuing challenge from PETA



TEXAS - Textile Exchange's Materials Matter Standard represents a major change to the organisation's certification system. The idea is to move away from a collection of separate material standards towards a more unified framework covering climate, nature, people and animals.

For Natural Fibres Insight, however, the first version raises some obvious questions. On the natural-fibre side it initially covers wool, mohair and alpaca, while organic cotton is following a separate transition route and other major plant fibres are not yet fully within the framework.

There are practical issues too. A broader standard means questions around audit cost, risk-based certification and whether "compliance" is the same thing as proving better outcomes on the ground.

For animal fibres there is also another issue. PETA argues that welfare standards cannot make the commercial use of animal-derived fibres acceptable. PETA continues to target animal-derived fibres (see pages 20-21) and its campaigns are still causing a serious headache for brands, producers and industry bodies attempting to defend the use of wool, cashmere, mohair and other animal fibres.

Textile Exchange takes a very different position, arguing that these fibres are being produced and, accordingly, the priority should be to improve the way animals are treated.

NFI put these issues to Gweneth Langdon, senior director of standards at Textile Exchange.

NFI: Why does the first version [of Materials Matter] cover wool, alpaca and mohair, but not yet bring major plant fibres such as cotton, flax and hemp fully into the same framework?

Gweneth Langdon: The first version of the Materials Matter Standard includes all materials currently covered by Textile Exchange's Responsible Animal Fiber framework, including wool, alpaca, and mohair, as well as recycled materials currently covered in the Global Recycled Standard and Recycled Claim Standard.

While Textile Exchange's long-term ambition is to create a more comprehensive and harmonised approach across material categories, the timeline for incorporating additional fibres, including plant-based fibres such as cotton will follow, with the establishment of partnership opportunities and transition pathways.

Our partnership approach is a key component of the Materials Matter system, as we look to recognise material partner programmes that align with Textile Exchange's principles of preferred production and with a shared vision for climate and nature impact. Organic cotton has long been an integral part of Textile Exchange's standards system and will continue to play a central role through a partnership approach, ensuring that by collaborating with recognised, established partners that build on the IFOAM Family of Standards, there will be a gradual transition pathway for the Organic Content Standard (OCS) into the Materials Matter system.

NFI: What will Materials Matter mean for certification costs and audit burden, particularly for smaller producers?

Gweneth Langdon: The development of the Materials Matter Standard is grounded in Textile Exchange's commitment to integrity, relevance, and continuous improvement. Since the work began in 2021, the criteria within the standard have been refined through successive drafts informed by stakeholder input and real-world testing. This iterative approach has enabled the criteria to evolve based on stakeholder experience, emerging practices, and pilot feedback, ensuring it remains relevant and practical for today's supply chain context.

It is important to note that worker interviews and minimum audit durations are not new with Materials Matter, these also existed in the legacy standard system. We have adjusted these requirements to accommodate the needs of the new standard, but also introduced updated tools for consistent risk-based audit planning and sampling. We are in the process of conducting multi-phase field pilots to gather data and assess the risk-based approaches introduced to understand their effectiveness.

We recognise that certification costs and audit burden are important concerns, especially for smaller producers. We are actively working to better understand the real cost implications through ongoing analysis, piloting, and stakeholder engagement, and will use those insights to inform next steps.

NFI: How will risk-based auditing avoid creating blind spots in lower-risk operations?

Gweneth Langdon: The Materials Matter assurance system requires certification bodies to use an objective risk assessment and sampling template, helping to ensure risk is categorised consistently across the system. Risk levels are then used to inform the appropriate level of assurance activity and focus greater effort on areas of higher risk.

This approach follows on from our legacy standards, so that assurance effort will continue to be proportionately and consistently based on identified risk. The Materials Matter system will focus on both proactive prevention and reactive enforcement to strengthen assurance and will be continuously reviewed as we actively seek to strengthen our policies and systems.

NFI: Why must at least 20 per cent of animal-fibre farm audits take place during higher-risk activities such as shearing, castration or tail docking, and why was 20 per cent considered sufficient?

Gweneth Langdon: This is not a new requirement and already exists as part of our Responsible Animal Fiber certification procedures. Audits carried out at times other than when shearing, castration, or tail docking are taking place will ensure that everyone on the farm with responsibilities for these activities is aware of the requirements of the standard. The audits that take place during these activities provide additional oversight that standard requirements are being put into practice.

The intent of setting 20 per cent was to strike a reasonable balance between seeing higher-risk activities and spreading audits throughout the year. It is hard for farmers to manage an audit on top of managing activities like shearing and many farmers in a region will be carrying out higher risk activities at the same time so the certification body cannot be on everyone's farm at that time.

Confidence in this level of observation does not rest on seeing the procedure itself. These procedures must be justified in a written welfare risk-benefit analysis, described in the health and welfare plan, and evidenced through records, and auditors have full access to the animals, the documents, and the workers on the farm. Since the effects on castration, tail docking, and shearing stay visible for weeks in wound healing and animal behaviour, interviews, observation and document review together give a reliable picture even when the audit falls outside that period.

NFI: If outcome monitoring is not independently verified, how can brands distinguish compliance from genuine environmental or social improvement?

Gweneth Langdon: Materials Matter is designed to drive environmental and social improvements by requiring the implementation of practices that are linked to positive outcomes for climate, nature, people and animals. The assurance system verifies that these practices are being implemented through regular independent audits, supported by oversight from accreditation bodies and Textile Exchange.

The standard introduces criteria for data reporting (e.g. the farm survey) and outcome monitoring. For many farms certified to an existing Textile Exchange standards, this will be new criteria. We felt this was an important step ahead of mandating verification of outcome data, an often costly process.

Materials Matter certification provides assurance that farms are implementing credible, evidence-based practices that are expected to deliver positive impacts. Materials Matter does not currently certify specific environmental or social outcomes, but it establishes a robust framework for improvement while Textile Exchange continues to strengthen outcome measurement and explore how verified outcome data can be incorporated more consistently in the future, balancing the value this can bring to the standard with the additional costs and practical considerations for producers.

NFI: Finally, how does Textile Exchange respond to PETA's continuing criticism of animal fibres and animal-welfare standards?

Gweneth Langdon: PETA are an animal rights organisation and opposes the use of animal fibres entirely whereas our focus is on improving practices where these raw materials are produced.

At Textile Exchange, we recognise and respect the important role animal welfare organisations play in pushing for change in the industry. We are aligned with animal welfare organisations in believing that animal-derived materials should only be used when the welfare of animals can be protected. Animal welfare organisations have provided input to the development of all our standards for animal materials.

The Materials Matter Standard firmly embeds the Five Domains model of animal welfare in its requirements, ensuring the promotion of positive welfare outcomes, not just the avoidance of negative ones.

> "The Materials Matter system will focus on both proactive prevention and reactive enforcement to strengthen assurance and will be continuously reviewed as we actively seek to strengthen our policies and systems"

12-year study tests regenerative cotton practices

Long-term research in Brazil has found that cover crops can significantly improve soil health in cotton production, adding useful evidence to the growing push towards regenerative cotton

BRAZIL - A 12-year field study in one of Brazil's major cotton-growing regions has provided new evidence that farming practices increasingly associated with regenerative cotton can deliver measurable improvements in soil health.

Researchers studied the long-term effects of crop diversification and cover cropping in cotton production on the sandy soils of the Brazilian savannah.

Five different cotton cropping systems were compared, ranging from conventional cotton monoculture to systems incorporating millet, cereals, legumes and grasses.

The results suggest that cover cropping can produce substantial improvements in the way soils function. But they also show that simply adding more crops to a rotation is not necessarily enough. What is planted is the key factor.

Grass-based systems produced some of the strongest results, with pearl millet and ruzigrass proving more effective at improving overall soil health than the leguminous cover crop tested by researchers.

One of the most pertinent findings concerned the balance between different soil functions. Cotton systems incorporating cover crops reduced variability between soil functions by 38 per cent compared with systems relying exclusively on cash crops.

The research, published in the Journal of Environmental Management, is based on a field experiment established in 2012.



The study site contains soil comprising more than 80 per cent sand in the upper 30cm, making maintaining soil carbon, structure and biological activity particularly challenging.

Researchers measured 14 indicators representing five soil functions: nutrient supply, water regulation and aeration, support for plant growth, erosion control, and carbon sequestration and cycling.

Most of the chemical and biological soil indicators measured were significantly affected by the different cropping systems after 12 years.

The findings are particularly relevant given the rapid growth of regenerative cotton programmes across the textile industry.

Cover cropping, crop rotation and reduced tillage have become closely associated with regenerative agriculture. Brands and sourcing organisations are increasingly encouraging farmers to adopt such practices as they look to improve soil health and the resilience of cotton production.

There remains, however, considerable debate about what constitutes regenerative agriculture and how progress should be measured.

Textile Exchange, for example, argues against treating regenerative agriculture as a fixed checklist of farming practices. Its Regenerative Agriculture Outcome Framework instead calls for an approach based around measurable outcomes which can be adapted to local farming conditions.

The Brazilian study supports such sentiments.

Simply recording that a cotton farmer uses cover crops says relatively little about what is happening below ground.

Researchers found that the functional characteristics of the crops being grown were more important than crop diversity alone.

Grass-based diversification with pearl millet and ruzigrass performed particularly well. Researchers said these species can help increase carbon inputs, improve soil structure and promote biological activity, all of which are difficult to maintain in tropical sandy soils.

The millet-cotton system and grass rotation were ultimately classified by researchers as both healthy and balanced. Cotton monoculture was classified as unhealthy and unbalanced.

The results do not suggest the same practices will produce identical outcomes in every cotton-growing region. Clearly, soil type, climate, rainfall and existing farming systems all affect how agricultural interventions perform.

This is also relevant to the debate around regenerative cotton.

There is no one farming system that can be transferred between Brazil, India, the US, Türkiye or other major cotton-producing regions with an expectation of achieving the same results.

However, the Brazilian research offers unusually long-term evidence that some of the practices now being promoted under the regenerative banner can produce measurable changes.

This is important and welcome news for brands making claims about regenerative cotton.

Origin verification and supply chain compliance

Fashion's growing interest in fibre provenance is being driven by a number of factors, regulatory reform being the most pressing. Brands are under growing pressure to substantiate claims about materials purchased through (often opaque) supply chains.

While a retailer may know its garment manufacturer well, it is likely to have considerably less knowledge of the cotton that manufacturer's fabric supplier purchased.

This oversight is becoming harder to ignore as regulation in the EU and US will increasingly compel brands to have a better oversight of their supply chains.

Hence the increasingly vital role of origin verification specialists, Oritain, whose forensic analysis allows companies to verify whether evidence in the fibre itself supports its declared geographical origin.

For cotton, this means analysing naturally occurring chemical signatures including isotopes and trace elements, which are influenced by the environment in which the crop grows. Oritain uses advanced statistical models to compare these results with a comprehensive reference database covering all core cotton producing regions, providing an independent validation of the origin recorded in supply chain documents.

Consider the example of a clothing brand paying for Australian cotton. While the purchase specification may be clear, the fibre will pass through several processing stages before the brand receives a finished garment. Testing offers a way to assess whether the cotton remains consistent with the declared source.

If a sample produces an inconsistent result, the buyer can investigate the affected batch with its supplier. There may have been a documentation mistake, or cotton from another source may have entered production. Either way, the discrepancy enables the brand to resolve the issue before making a claim to customers.

The regulatory picture around supply chains is changing, and traceability is shifting from being 'desirable' to 'business critical'. The EU's Empowering Consumers for the Green Transition Directive is clamping down on generic, unproven environmental claims. It prohibits sustainability labels that are not based on a certification scheme or established by public authorities.

Working with Oritain allows a brand to strengthen the origin evidence, leaving them better placed to distinguish what they know from what still requires substantiation.



Forced labour legislation is another reason why brands now require much better oversight of their sourcing. The EU Forced Labour Regulation applies from 14 December 2027 and prohibits products made with forced labour from being sold in or exported from the EU.

Businesses supplying the US already face the Uyghur Forced Labor Prevention Act. This establishes a rebuttable presumption against imports made wholly or partly in high-risk regions, or by entities on the UFLPA Entity List. US Customs and Border Protection recognises isotopic testing as a tool for verifying products and validating supply chains.

Textiles and apparel are a priority under the EU's Ecodesign for Sustainable Products Regulation, although textile-specific Digital Product Passport requirements are still in the planning stages.

Oritain's existing work with Supima and Cone Denim illustrates the important role that origin verification already occupies in cotton sourcing. This helps a buyer to assess whether an established supplier continues to meet an agreed sourcing specification.

Connecting a forensic testing programme to the relevant production batch gives that product information a practical use today. It means that when a customer asks about origin, the supplier can retrieve substantiated evidence relating to the material supplied.

As fashion prepares for more demanding scrutiny, such oversight will become invaluable. Ultimately, for a brand investing in a particular fibre source, verification helps it to establish whether it is receiving what it paid for.

Zentera faces the wool assurance challenge

With regulation around supply chains mounting, brands now want a much closer view of how their wool is produced. Zentera Wool Company chief executive Angus Street tells NFI how the business is responding, and why confidence in farmers must be supported by evidence



ZQ certified merino wool

For a wool supplier, a brand's interest in the farm can be a double-edged sword. A closer relationship offers the prospect of more secure business with less chance of the unexpected. But it also brings questions about animal welfare, along with a demand to demonstrate that the fibre reaching a garment is the wool the buyer ordered.

These expectations run through our recent conversation with Angus Street, chief executive of Zentera. He views them as a central part of the company's work, even as brands continue to reconsider spending plans around a challenging macroeconomic environment and the political appetite for sustainability requirements continues to pivot.

The bottom line here is that buyers still need to understand their supply chains. The question is how much assurance suppliers can give them, and what needs to happen to ensure that assurance is credible.

Street makes an informed and thoughtful case. His knowledge of the business is deep and nuanced, as is his obvious love of wool. More encouraging, particularly when we turn to welfare, is the attention he gives to what happens on farms in practice.

His answers make clear that caring about animals and demonstrating how they are treated are different responsibilities.

Zentera's recent change of name from The New Zealand Merino Company reflects a business that has outgrown its original description. Street says the company buys and sells certified fine merino and coarse wool, and sources its wool from certified farms across New Zealand, Australia and South Africa.

"The New Zealand Merino Company wasn't really representing who we had become," he says.

This wider sourcing base gives Zentera access to growers with different circumstances and routes to market. It also makes consistency more demanding. Street identifies non-mulesed wool as the first requirement for market expansion, followed by growers' willingness to have their practices checked through certification. He also sees interest in verification extending beyond Europe, including among Chinese brands seeking customers overseas.

Certification, for Street, can mean changes on farms, more information gathering and regular independent audits. That requires a farmer who is comfortable opening the business to scrutiny. Street describes the necessary attitude by suggesting farmers need to have the mindset of: "I'm very comfortable someone coming on to my farm and double checking that I am [willing to validate my claims]."

> "Growers want to make sure that their wool's just not being shoved into the supply chain and could go anywhere. They want to know where their wool is going"

Brand Expectations

For brands, the benefits of certification reach way beyond an assurance label. Street says Zentera helps map existing supply chains and build new ones where a customer wants to introduce a wool product. Understanding where fibre comes from can also give a buyer more influence over the quality of the finished garment. "Quality is absolutely top of the list," he says.

There is a corresponding interest from the farmers Zentera works with. "Growers want to make sure that their wool's just not being shoved into the supply chain and could go anywhere. They want to know where their wool is going to and have a connection with the finished product," Street adds.

While the growing appeal of traceability is easy to understand, proving the connection link to specific farms through processing and manufacturing is not always so straight forward. Street identifies digital traceability as an important area of work, with buyers seeking confidence that the wool they procure is what they receive. For a brand making a claim about the origin of its wool, that connection has to survive processing and manufacturing stages.

The discussion around traceable wool becomes more specific when we ask about the development of ZQ and ZQ+, Zentera's best-in-class certification programmes. Street says the programmes must respond to what customers need while considering the cost and production implications for farmers. There is a limit to how much additional work growers can absorb before wool becomes unattractive – or uneconomic - to produce.

"We don't want to put significant constraints on growers because they'll just stop growing wool," he says.

That is a genuine and ongoing commercial constraint. It also leaves Zentera with difficult decisions about how quickly to raise expectations and how to help farms meet them. The most illuminating example Street offers concerns shearing, where written standards have to stand up to scrutiny during a busy working day.

Street describes Zentera's in-shed camera trials as one way of observing animal and human welfare during busy animal handling periods. Following a pilot last year, the company is also recommending that growers appoint animal welfare observers during shearing to help ensure ZQ requirements are met. "They would be responsible for monitoring the shearing process as it's occurring, making sure that it's meeting ZQ requirements," he says.

He says farmers are often already in the shed watching the work. However, a trained person with a defined responsibility adds another level of oversight.

Zentera works closely with animal rights NGO, Four Paws, which reviews ZQ and ZQ+and offers suggestions for improvement. He describes a relationship in which welfare concerns can be discussed practically.

The willingness to listen is encouraging, as is the recognition that wool cannot answer every criticism by asking people to trust farmers. Street's position deserves credit, while the measures he describes also deserve continued scrutiny as they evolve.





Angus Steet, Zentera chief executive officer

While assurance is critical for an industry which remains under scrutiny, there are much broader issues at play. As we discuss in these pages, global wool output has waned in recent years. Production has even fallen in New Zealand, and this challenging picture appears ironic given the heightened interest we are seeing in natural fibres. "They are having a moment," Street says.

When we put the apparent mismatch between enthusiasm for natural fibres and weak production to him, Street points to the delay between shearing and garments reaching shops. He adds that sustained prices, as we have seen across many regions this past 12 months, would give growers a reason to increase production over the next two to three years.

Asked about apparel specifics, he says the company is seeing significant interest from performance and active wear brands, wanting to invest in wool that is high performing and ethically sourced.

Yet he is clear that the sector cannot assume a recovery can be taken as a given. "As an industry, we can't sit back and just expect it to be given to us on a plate," he says.

In fairness, Zentera appears to be taking that responsibility seriously. It seems to us that the challenge now is to turn the measures Street describes into consistent, demonstrable results, while keeping wool production worthwhile for growers.

That is where confidence in wool's future will have to be earned - on farms, through the supply chain and in the clear evidence brands can put behind their claims.

European cotton makes its case with new campaign

Europe produces only a small share of the world's cotton, but its growers believe the fibre's proximity, traceability and regulatory credentials could become increasingly valuable to textile brands. NFI speaks to European Cotton Alliance President DIMITRIS POLYCHRONOS who believes sourcing decisions need to move beyond price

LONDON - Cotton is not necessarily the first fibre that springs to mind when discussing European agriculture. Yet Europe has a long-established cotton sector of its own, concentrated overwhelmingly in Greece and Spain and, on a much smaller scale, Bulgaria.

Greece is by far the largest producer, accounting for around 80 per cent of European Union cotton area and production, with cultivation concentrated in central and northern regions. Spain, where production is centred largely in Andalucía, accounts for around 20 per cent. Bulgaria has a considerably smaller industry, with cotton grown on around 2,000 hectares. The European Commission says approximately 40,000 growers are involved in cotton production in Greece alone.

Could this output increase? The European Cotton Alliance (ECA) and the EUCOTTON initiative certainly believe European-grown cotton has several tailwinds in its favour. They are attempting to position the fibre around qualities that are becoming increasingly important to European textile buyers. These include known origin, shorter supply chains, farming within the EU regulatory system and the ability to connect raw material information further into the textile value chain.

The EUCOTTON campaign has specifically sought to raise awareness of the quality, production model and traceability of European cotton. Its own figures suggest around one quarter of European cotton is used directly by the European textile industry, while most of the remainder is exported, including to textile manufacturing centres around the Mediterranean and in Asia. Some subsequently finds its way back into Europe in finished textile products.

We have a rather unusual situation whereby Europe grows a significant quantity of a natural textile fibre at home, but brands and consumers often have little idea that the cotton in a garment originated there.

The EUCOTTON campaign believes there may also be a regulatory opportunity opening up. The EU Strategy for Sustainable and Circular Textiles is placing much greater emphasis on product durability, environmental performance and supply-chain information. Meanwhile, the Ecodesign for Sustainable Products Regulation has established the framework for Digital Product Passports, under which product-specific rules can require sustainability and traceability information to follow goods through the market.

For European cotton, new regulations around traceability potentially plays to one of its strongest cards: proximity.

Dimitris Polychronos, president of the European Cotton Alliance and CEO of Nafpaktos Textile Industry, believes the sector now has an opportunity to make a much stronger case to brands. In conversation with Natural Fibres Insight, he argues that European cotton should be judged on the realities of how it is grown rather than on global assumptions about cotton, while also acknowledging that better farm-level environmental data is still needed.

NFI: EUCOTTON presents European cotton as a more sustainable and traceable fibre. What is the strongest evidence behind that claim, and where does the industry still need better data?

Dimitris Polychronos: One of the strongest points is the regulatory environment in which European cotton is produced. Growers operate within the Common Agricultural Policy and have to meet environmental, social and compliance requirements covering areas such as crop management, soil conservation, crop rotation and crop protection products.

There is also the question of proximity. European cotton is grown relatively close to the European textile industry. That can reduce transport distances, but it can also make supply chains easier to understand and potentially easier to verify.

> "As European requirements around Digital Product Passports and product environmental information become clearer, we need systems capable of delivering information in a consistent format"



Where we still need to improve is the data. Measurements for water use, biodiversity and carbon footprint can sometimes be based on broad averages which do not properly represent conditions at individual farms or within specific growing regions.

We have seen very positive technical findings from independent auditing work, including results around soil resilience and carbon storage. The goal now is to bring this information together into robust systems that describe what is actually happening in European cotton-growing regions and allow meaningful comparisons with other origins.

NFI: Cotton is frequently criticised over water consumption, pesticide use and pressure on land. Is European cotton sometimes being judged using global averages that do not reflect conditions in Greece, Spain and Bulgaria?

Polychronos: Yes, and that is an important point. Cotton is grown under very different climates, regulations and agricultural systems around the world, so applying one global figure to every cotton-growing region can be misleading.

Water is a good example. In Greece and Spain, growers are increasingly using technologies such as drip irrigation and precision agriculture to improve efficiency. Cotton is also better adapted to Mediterranean growing conditions than is sometimes assumed.

The same applies to crop protection. European growers work within strict EU rules, including restrictions on substances and requirements around monitoring. Integrated Pest Management also encourages farmers to reduce dependence on chemical interventions by using preventative or biological approaches where appropriate.

We are also seeing increased interest in regenerative agricultural practices.

NFI: How far can European cotton currently be traced from farm to finished product?

Polychronos: European cotton is already in a strong position. Traceability can be established from the gin through subsequent textile manufacturing stages and, in many cases, through to the final product.

The sector has developed a management scheme and digital traceability platform designed to allow information to move through the supply chain, and there is increasing interest in taking that information directly back to farm level.

But simply having a traceability system is not enough. The information behind it has to be accurate, verified and meaningful. There are private traceability systems in the market which do not necessarily deliver all the information that people assume they do.

The next stage is greater harmonisation. As European requirements around Digital Product Passports and product environmental information become clearer, we need systems capable of delivering information in a consistent format. That is where European cotton can potentially have a significant advantage.

NFI: What role should European cotton play in the EU's wider textile strategy?

Polychronos: I believe it should be viewed as a strategic European raw material. There has been a great deal of discussion in recent years about resilience, transparency and shortening supply chains. European cotton fits directly into that conversation because it gives the textile sector access to a fibre cultivated within the European regulatory framework and relatively close to European manufacturing.

There is also a broader economic argument. Supporting European cotton means supporting farmers and businesses that are already part of the European textile value chain. Autonomy, social responsibility and environmental compliance can all contribute to building a stronger regional industry.

As European textile policy develops, natural fibres grown within Europe should therefore be properly recognised. Legislation needs to reflect both their environmental and social characteristics and the role they can play in resilient regional supply chains.

NFI: What needs to happen over the next three years if European cotton is to move from a relatively niche sourcing story into the mainstream?

Polychronos: It requires movement from both policymakers and brands. From policymakers, we need clear and stable legislation. Companies need to know what information will be required around traceability, Digital Product Passports and sustainability performance so that they can invest with confidence.

Brands also need to make sure their purchasing decisions reflect the sustainability commitments they make publicly. Too often procurement still comes back primarily to price.

If a raw material provides greater transparency, responsible production and a known European origin, those attributes need to have a value within the sourcing decision.

We also need to restore some value to clothing itself. The current fast-fashion model has encouraged garments to be treated as short-lived products. Greater emphasis on durability, quality and the relationship consumers have with their clothes would change the discussion around what represents good value.

Finally, European cotton needs a stronger collective identity. A recognised trademark, supported by meaningful quality assurance, can make the fibre more visible to brands and consumers.

How we measure the carbon **footprint of natural fibres matters**

By **JAMES BLIGNAUT**



Mohair South Africa is continuing to gather data and build understanding of the environmental profile of mohair production. As part of this work, it has begun exploring biogenic carbon within the industry, including an initial project conducted on a South African mohair farm. It recognises that complex questions remain about how natural fibres and their environmental impacts are measured and assessed.

In this article, James Blignaut explores these considerations, including the limitations of conventional life-cycle assessments and the treatment of biogenic carbon. It also considers what this means for how we understand the environmental footprint of natural fibres.

James work on biogenic carbon offers a useful perspective for the mohair sector, highlighting the importance of understanding how carbon moves through vegetation, grazing animals, soils and the fibre itself.

This work is a first step towards assessing how biogenic carbon accounting could contribute to a more complete understanding of mohair's environmental footprint.

Life cycle analysis (LCA), the standard method for measuring and comparing the impact or footprint of natural fibres, and for that matter a gamut of other commodities, products and processes, originated in the mid-1960s.

Among its first applications was to ascertain the amount of energy required to produce a range of chemicals. This was later expanded to include other industrial and energy applications to estimate the environmental impact and waste generated by various production processesi. These studies all have in common that they compared the impact of several products, processes and outcomes of linear industrial emission-based systems with one another.

Over time, the application of LCAs has also become common within the context of natural, biological, on-farm systems. Biological on-farm systems are, however, by definition complex, dynamic and cyclical (as opposed to linear) and involve several intricate feedback loops that span many years which could even extend to decades.

Reducing this multi-dimensional movie to a snapshot, a single number of an enterprise's environmental intensity at a point in time, is highly reductionistic and can easily lead to erroneous estimates. As a result, LCA guidelines, including ISO, warn against using these simplistic measurements to compare one fibre to another in public-facing communications.

Despite these limitations and warnings, LCA data is widely used across fibres and supply chains, including to compare products of biogenic origin with those derived from fossil carbon in tools such as the Worldly Higg Index and in the proposed EU PEF project.

These metrices focus mainly on the emissions of natural fibres with no to limited attention to the multitude of on-farm carbon pools, the flow of carbon in and among these pools, and the intricate life-giving carbon-water-nutrient nexus.

Given this unidirectional emphasis on emissions, the carbon intensity of bio-derived fibres is unfavourably high. It is high by design since it excludes most of the beneficial on-farm carbon and methane mitigation cycles. It treats sheep and goats simply as grass-consuming incinerators that release methane.

Nevertheless, the tide is changing. Recognition is growing of the beneficial impact of ruminants for the long-term health of natural ecosystems such as grass- and shrublands. This includes ruminants' contribution to the suppression of fire and the regeneration of grass through photosynthesis and the production of multiple carbon poolsii.

In fact, the simplistic, one-dimensional permanence requirements demanded by the carbon trading and accounting sector may undermine soil health and productivity by requiring biologically inert carbon stocks. To account for the temporal and spatial complexity of on-farm biological systems, changes must be made to the way LCAs have been performed conventionally. LCAs are flow-based tools and thus permanent carbon stocks, and on-farm carbon flows should not be mixed in the analysis.

The carbon which flowed from the atmosphere to the grass (through photosynthesis) to other carbon-containing pools (by virtue of the grass being grazed) during the period of reporting must be accounted for. These pools could include, among others, the carbon contained in the mortalities, manure, urine and in various products such as wool, mohair and meat.

Accounting systems that make no provision for the cycling of carbon treat all carbon digested as if it is additionally returned to the atmosphere. These practices make no distinction between fossil and biogenic carbon. On-farm biological systems should not be modelled as linear factories generating fibre, live animals and additional emissions. A system that comprises only leakages - emissions - is a system that will quickly run out of internal or stored nutrients. The fact that grass regrows quickly after being grazed illustrates both the evidence and the significance of return flows.

Still, many critics will object to this recognition of the flow of carbon in and through several carbon pools under the notion of "delayed emissions." They will argue that this flow of carbon does not reflect a carbon removal, but only the cycling thereof and that the carbon contained in the recyclate will be released over time.

> "The concept of delayed emissions, or the cycling of carbon, can only be applied if adequate provision for the short-lived nature of methane is equally made"

Within the period of reporting - and at farm-gate - the carbon in the various pools mentioned are, for the most part, intact, and this should be acknowledged within the accounting framework. The concept of delayed emissions, or the cycling of carbon, can only be applied if adequate provision for the short-lived nature of methane is equally made.

Methane is a short-lived molecule. By incorporating it in LCAs as a single pulse with its associated global warming potential invariably assumes that the methane emissions are additional. Within a steady-state context, that is not the case. The methane concentration in the atmosphere stabilises over time when accounting for both the emissions and the rapid decay thereof. The net flow of, or change in, atmospheric methane from a stable stock of ruminants is therefore also stable. This stabilisation process, however, happens outside of the conventional LCA reporting period. If all carbon cycling activities are to be treated as delayed emissions over time, then the decay of methane over time should be incorporated as well.

This is only possible if a multi-decadal view is taken on both the biogenic carbon and methane cycles. Failing such long-term view but applying the short-term effect of a methane pulse necessitates the acknowledgement of a multi-pool carbon recyclate as an on-farm reality as outlined above.

When measuring the footprint of animal-derived natural fibres, how and what we measure is important. For too long a biased yardstick has been used to the detriment of the sector. It was a yardstick that considered emissions to be permanent and additional, but either under-reported the flow of biogenic carbon through various pools or negated them as being released over time.

It thus provided the sector with the worst possible emission intensity, one that over-emphasised the emissions and under-estimated the impact of the recyclate.

When incorporating either the effect of the recyclate of the decay of methane, the emission intensities of natural fibres are significantly lower, and could even be negative (i.e. net removals). Humbly we must be grateful that ruminants, by keeping grass- and shrublands covered in vegetation while stimulating the regrowth thereof, have contributed to climate amelioration since the dawn of time, simultaneously also providing durable and high-quality fibres, among others.

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Extreme weather is changing how **Xinjiang cotton is grown**

A study of more than 1,000 cotton-growing households in Xinjiang has found that extreme heat, cold and wind-sand events are pushing farmers towards new production techniques

BEIJING - Cotton farmers in Xinjiang are changing the way they grow their crops in response to extreme weather, according to new research which provides an unusually detailed picture of climate adaptation in the world's most important cotton-producing region.



Researchers surveyed 1,026 cotton-growing households across 46 villages in Xinjiang and examined how farmers responded to a range of weather risks.

The study found that exposure to extreme weather significantly increased the likelihood that farmers would adopt techniques intended to protect cotton crops from meteorological hazards.

Extreme heat, low-temperature chilling and wind-sand events were the main triggers.

Xinjiang produces more than 90 per cent of China's cotton and accounts for a substantial share of global supply, despite imports of it being banned in the US.

Researchers examined the use of six adaptation measures: drip irrigation beneath plastic mulch, a technique known as dry sowing and wet emergence, windbreak nets, stress-resistant cotton varieties, adjustments to the timing of field operations and the use of plant growth regulators.

Some of these practices are already well established in Xinjiang. Others, including windbreak nets, stress-resistant varieties and plant growth regulators, have much lower adoption rates.

The research found that farmers were more likely to make changes when extreme weather increased their perception of the risks they faced and when they, "believed the available measures would work."

Access to climate information and agricultural technology extension services both increased farmers' willingness to adopt adaptation measures.

But the researchers identified a significant weakness in the climate information currently being provided.

Farmers were generally able to access weather information and considered it reasonably accurate, but its usefulness in telling them what they should actually do was rated much lower.

This suggests that weather warnings alone may have limited value unless they are accompanied by practical information on how growers should respond.

Agricultural extension services appeared to have a stronger effect, helping farmers translate information about weather risks into changes in field management.

Perhaps surprisingly, access to credit did not have a statistically significant effect on whether farmers adopted climate adaptation techniques.

The researchers suggest this may partly reflect the structure of agricultural finance. Around two-thirds of surveyed farmers had agricultural loans, but most of these were for one year or less, making them less suited to investment in longer-term adaptation measures.

The research comes as Xinjiang faces growing concern over the effect of climate change on cotton production.

The region has benefited historically from abundant sunshine and irrigation, but cotton is vulnerable to temperature extremes during important stages of development. Wind and sand can also damage young plants, while heat and water stress can affect both yields and fibre quality.

The study found that the response to extreme weather was not uniform.

Farmers in less favourable cotton-growing areas were more likely to adapt, as were members of agricultural cooperatives. The researchers suggest cooperative membership can improve access to weather warnings, technical advice and purchasing services.

There was also an important distinction between different types of extreme weather. Heat, chilling and wind-sand events encouraged farmers to adopt preventative measures, but hail did not. The researchers suggest this is because hail is sudden and difficult to defend against, making investment in preventative technology less attractive.

For the textile supply chain, the study provides an indication of how climate change is already beginning to alter cotton production at farm level.

The response is not simply a question of using more irrigation. Farmers are changing varieties, planting and field-management decisions and adopting technologies intended to make crops more resilient.

Climate change threatens supply **of premium US cotton**

New research suggests hotter and drier conditions could have a major impact on cotton fibre quality in Mississippi, with water stress potentially eliminating long-fibre classifications across the state's cotton-growing regions

MISSISSIPPI - Climate change could make it increasingly difficult to produce higher-quality cotton in parts of the US, with new research suggesting water stress could effectively eliminate long-fibre cotton from Mississippi under the conditions modelled.

The study, published in Field Crops Research, examined how temperature and water availability affect cotton fibre quality across 66 cotton-growing counties in Mississippi.

Researchers looked at four important quality characteristics - fibre length, strength, micronaire and uniformity - and modelled how these changed under different temperature and water conditions.

The results suggest the threat to cotton is not just about how much fibre farmers will be able to produce as the climate changes, but that the quality of that fibre could change as well.

Water availability emerged as the biggest concern. Under baseline conditions, all of the counties studied were capable of producing cotton classified as long fibre. Once water stress was included in the modelling, the proportion fell from 100 per cent to zero.



Under a further scenario combining warmer and drier conditions, all counties moved into lower fibre-quality classifications.

Fibre length was particularly vulnerable. Researchers found differences of around 4.6mm between baseline and water-stressed scenarios across the cotton varieties studied. Under the warmer and drier scenario, the difference increased to around 6.2-6.3mm.

Fibre strength and uniformity also declined as conditions became hotter and drier.

Longer and more uniform fibres are generally better suited to producing finer and stronger yarns and command higher prices in the cotton market. Changes in quality therefore have implications beyond the farm, extending into spinning and ultimately textile sourcing.

The study also looked at one relatively simple response to climate change: changing when cotton is planted.

Higher temperatures can create wider potential planting windows because cotton accumulates the heat required for development more quickly. The researchers found this was particularly true for mid and late-season varieties.

But a longer planting window did not translate into better cotton. Once water stress was taken into account, the potential gains associated with changing planting dates were substantially reduced. The researchers concluded that water availability is likely to be a more important constraint on future fibre quality than temperature alone.

The study suggests the timing of water stress also matters. The research identified the first three weeks after flowering as particularly important for fibre length. Maintaining adequate plant water status during this period was described as the, "most important intervention for protecting fibre elongation under increasingly variable climatic conditions."

The findings point towards irrigation management, cultivar selection and more locally tailored planting decisions as possible ways of protecting fibre quality.

It also raises a wider issue for cotton sourcing. Much of the discussion around climate change and natural fibres has concentrated on future production volumes. For brands and textile manufacturers, however, a fall in yield is only one potential problem.

A producing region could continue growing substantial quantities of cotton while producing less fibre meeting the specifications required for higher-value textile applications.

The US is particularly important in this respect because it is one of the world's major cotton exporters, supplying mills internationally.

Mississippi itself is only one part of the US Cotton Belt and the researchers do not claim that their results can simply be applied to every cotton-producing region. Irrigation availability, varieties, soils and local climate conditions differ considerably.

There are nevertheless signs that the issue extends beyond Mississippi.

Previous research examining future climate conditions across the wider US Cotton Belt has also projected declines in fibre length and uniformity, even when planting dates are optimised.

The latest study goes a step further by incorporating water stress rather than assuming that cotton has unrestricted access to water throughout the growing season.

Cotton growers call for change in Australia's water policy

Cotton Australia says the next phase of water reform should concentrate on making existing environmental water work better, rather than further reducing supplies available to agriculture

SYDNEY - Australia's cotton industry is calling for a change in the direction of national water policy. It argues that nearly two decades of reform have established the main framework needed to manage the country's water resources but that future efforts should concentrate on making it work more effectively.

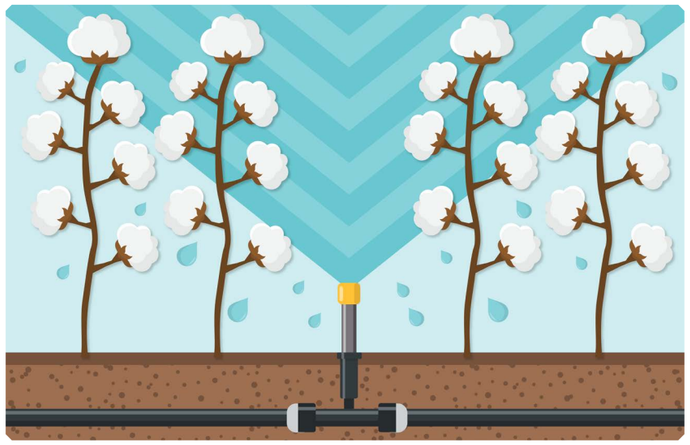
In a submission to the Independent Review of the Water Act 2007, Cotton Australia says further large-scale recovery of water from agricultural production should not be the default response to environmental concerns. Instead, it wants greater attention paid to the management of water already reserved for the environment, alongside practical measures to improve river health.

The organisation represents around 1,500 cotton farms, principally in New South Wales and Queensland. Its submission, prepared by general manager Michael Murray, contains 24 recommendations covering water entitlements, markets, environmental management, regulation and the effects of reform on regional communities.

Much of Australia's cotton production depends on irrigation in the Murray-Darling Basin. Water availability affects planting decisions, farm investment and the amount of cotton that can be produced from one season to the next.

Cotton Australia argues that the principal architecture of water reform is now largely complete. In its submission, it points to the development of sustainable diversion limits, environmental water holdings, trading arrangements and compliance systems, and argues that the next task is to improve their operation rather than undertake another major restructuring.

The submission says aggregate water recovery is at, or close to, the Basin Plan's 2,680-gigalitre target. It also notes that all 91 assessable water resource areas were reported compliant with their sustainable diversion limits in 2024–25.



Those figures form part of the industry's case for consolidation, although compliance with extraction limits is not, by itself, evidence that every environmental objective has been achieved.

Cotton Australia also cites modelling which it says found that additional environmental water would produce no measurable improvement in around 92 per cent of assessed water resource units. On that basis, it argues that further gains may be better achieved through measures such as improving fish passage, controlling carp, managing riverbanks and floodplains, and addressing water quality.

The submission draws on the Murray-Darling Basin Authority's 2025 evaluation, which acknowledged that providing water to important environmental sites had proved more complex than originally assumed. Cotton Australia sees this as support for a broader approach to river management.

Water rights are another major concern cited. The organisation wants greater certainty over the reliability of growers' entitlements and opposes changes that would effectively acquire water through administrative rules. It argues that future reallocations should generally take place through transparent markets and willing-seller arrangements.

It also calls for more detailed assessment of the economic and social effects of reform. Basin-wide figures, it argues, can obscure the consequences for individual irrigation-dependent communities, where changes in water availability may affect farms, employment and associated businesses.

Natural Fibres INSIGHT

Europe's 91,000-tonne wool opportunity

With European sheep farmers often earning less from wool than they spend on shearing, a new EU CAP Network report has identified the missing infrastructure and fragmented markets holding the sector back



BRUSSELS - The EU produces around 91,000 tonnes of wool a year, yet the income it generates often fails to cover the cost of shearing. That gap between a useful raw material and its meagre financial return is the central challenge examined in a new EU CAP Network report.

Published in early September, the report brings together findings from 20 experts across 16 countries. It describes an industry with significant commercial opportunities but poor connections between the people producing wool and the businesses capable of turning it into saleable products.

Its central message is that farmers need a stronger role in the business. While better fleece preparation and regional identity can help create value, producers need to identify a supply chain that rewards those efforts. If they can't, there is little financial incentive to invest more time in wool.

The report identifies five priorities for European wool. These are processing infrastructure, practical skills, traceability and communication, innovation, and stronger cooperation. Together, these address a basic commercial problem, which is that decent material cannot command a worthwhile price if it cannot reach the right buyer.

This is, in many ways, a marketing issue. Readers who have been following us from the start will note the interview we did with British Wool in 2024, and the role of savvy marketing and PR in boosting prices for the British wool clip.

One of the clearest findings of the new EU report is a gap between large industrial processors and small craft operations. It argues that Europe needs more facilities capable of handling regional wool volumes flexibly and economically.

It suggests collection hubs, smaller scouring facilities and intermediate processing operations could help fill that gap. If infrastructure is distant or unavailable, transport costs erode returns and make it harder to retain value locally.

The diversity of the raw material adds another challenge. The report describes more than 600 sheep genetic types across Europe, including around 300 formally recognised breeds. That creates opportunities for different products, but makes consistent supply and product matching more complicated.

Meanwhile, the farming base is contracting. Eurostat recorded 57 million sheep in the EU in 2024, down 1.7 per cent in a year and 9.4 per cent from 2014. Spain held almost a quarter of the EU flock, followed by Romania and Greece. The wool production figure covers the EU-27, excluding the UK and other European producers.

Finding a market for more of the fleece

The report points to practical examples which illustrate what better connections can achieve. In western Finland, Satu Kumpulainen, owner of Isokumpu Farm, links sheep farming with an on-site spinning mill and direct yarn sales.

"We do everything ourselves on the farm," she told the EU CAP Network.

Her business keeps 400 native-breed ewes and processes their wool into yarn sold through its farm shop, retailers and online. Lower-grade material becomes felt or biodegradable ground cover for fruit crops, in an approach which gives different portions of the fleece an alternative destination.

Other projects are exploring customers beyond clothing. Fertiwool, presented at an EU CAP Network livestock meeting, converts wool waste into slow-release fertiliser pellets that also help soil retain water. The EU-supported Rustic Wool Robotuft project combines coarse Italian wool with robotic tufting to produce customisable carpets.

While such examples illustrate the range of possible outlets, their wider commercial value depends on reliable supplies, suitable processing and repeat demand.

The report concludes that Europe needs approaches adapted to different regions and wool types. Its recommendations connect investment with training, market development and cooperation.

Standard Wool invests in UK processing

DEWSBURY - Standard Wool is installing new wool scouring equipment at its Thomas Chadwick & Sons operation in West Yorkshire, supporting an increasingly scarce part of Britain's textile supply chain.

Work has progressed throughout the summer at Eastfield Mills, where wool has been processed since 1864. An update issued in late August showed installation advancing towards commissioning.

The business is one of only two significant commercial wool scouring operations remaining in the UK.

Scouring cleans raw fleece before further processing, providing an essential connection between sheep farms and manufacturers.

Standard Wool supplies material for knitwear, cloth, bedding, carpets and insulation, sourcing wool from Britain and overseas.

The investment highlights the importance of processing infrastructure alongside efforts to develop new markets for wool. Domestic cleaning capacity gives British manufacturers an option to retain this stage of production locally, rather than sending raw material abroad before it reaches mills.

ARKET brings soil-free cotton to the high street

ARKET has introduced its first garments made from cotton grown without soil, bringing an alternative cultivation method into its autumn 2026 collections.

The retailer is working with Spanish company Mediterranean Agro Technologies, known as Magtech, which has been developing hydroponic cotton since 2021. The launch includes women's ribbed jersey long-sleeved tops and a fitted ribbed T-shirt for men.

In hydroponic cultivation, water and nutrients are delivered directly to plant roots. Excess water is collected, analysed and recirculated, while growing conditions can be monitored throughout the season.



ARKET says the approach aims to reduce dependence on irrigation water and arable land. Cotton accounts for around 60 per cent of the materials used across its collections, making developments in its cultivation particularly relevant to the business.

The wider project involves H&M Group's Circular Innovation Lab and combines hydroponics with artificial intelligence to monitor plant development and target treatments.

According to the H&M Foundation, an initial five-tonne batch produced in Spain passed quality checks and was converted into garments. A second cultivation site is being established in India.

Cameras have been used to assess crop development and identify infestations early, allowing treatment to be directed towards affected plants. Robotics are also being developed to automate harvesting.

However, the environmental benefits still require independent verification through a life cycle assessment. Magtech co-founder David René Rodríguez describes the system as a complementary approach suited to locations where water or fertile land is limited.

"We're not claiming zero impact or trying to replace conventional cotton," he said.

New Zealand backs NZ$2m wool bedding trial

WELLINGTON - New Zealand is backing a NZ$2m research programme to test how strong-wool bedding performs against synthetic alternatives, with the aim of building evidence to support higher-value markets for the fibre.

The three-year programme is led by Wisewool and includes NZ$800,000 from the government's Primary Sector Growth Fund. Participants will be assessed in their own homes and in sleep laboratories.

Researchers will examine how quickly people fall asleep, alongside body temperature regulation, breathability, moisture management, hypoallergenic performance and overall comfort.

Announcing the support, Agriculture Minister Todd McClay said scientific evidence could help position strong wool as a premium bedding material and open international markets. The announcement did not include trial results.

The Ministry for Primary Industries said the project's start date is 1 April 2026, with NZ$1.2m in co-investment alongside public funding. Its stated objectives include supporting manufacturer adoption and building consumer confidence in wool bedding.



The programme follows earlier government support for Wisewool's development of woollen knops, small fibre balls used as filling.

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Wool output falls to **lowest level since 1940s**

World wool production fell to its lowest level since the 1940s in 2025 and is expected to decline again in 2026, as low returns and stronger demand for sheep meat continue to reshape farming decisions

WASHINGTON - Clean wool output fell below one million tonnes in 2025. The latest World Natural Fibre Update from the Discover Natural Fibres Initiative (DNFI) estimates production at 940,521 tonnes, down from 990,816 tonnes in 2024. Output is forecast to slip by a further 6,580 tonnes to 933,941 tonnes this year.

The decline leaves wool accounting for just 0.74 per cent of all fibre production and 2.9 per cent of natural fibre output. This is a concerning position for a fibre with such a long history in apparel.

According to the report, farmers have responded to weak wool prices and comparatively strong sheep meat prices by reducing flocks of wool-producing breeds in favour of meat breeds. Some have moved out of sheep altogether and into beef or cropping. Drought across a large part of Australia's sheep and wheat regions during 2025 added to the contraction.

However, lower supply has actually helped to lift wool prices since 2024. The Australian Eastern Market Indicator, widely used as a measure of fine apparel wool prices, stood at US$13.25 per kg in August. That was little changed from July, but well above the 2025 average of US$8.52 per kg.

Will higher wool prices tempt some producers back into wool? That may be the case, however, the latest figures suggest the rise may have levelled out. The British Fleece Price Indicator, which covers stronger wool used mainly in floor coverings and some outerwear, fell 10 per cent in August to US$3.43 per kg clean. DNFI also cautions that higher wool prices have been accompanied by increased farm input costs. A production recovery in 2027 therefore cannot be assumed.

Total Production

The latest DNFI figures show that total global fibre production reached an estimated 127.1 million tonnes in 2025, led by continued growth in manmade fibres. Natural fibres accounted for 32.9 million tonnes, or 25.9 per cent of the total, while synthetics and manmade cellulosics made up the remaining 74.1 per cent.

Polyester alone reached 71.2 million tonnes and represented 56 per cent of all fibre output. Clean wool production was less than one seventy-fifth of that volume. This comparison shows how exposed wool has become to changes in livestock economics, while competitor fibres continue to expand through industrial capacity, mainly in Asia.

Cotton remains the natural fibre sector's dominant force by a wide margin. Production reached an estimated 26.6 million tonnes in 2025, its highest level in eight seasons. It accounted for 80.7 per cent of all natural fibre production and just under 21 per cent of world fibre output.

That increase is expected to reverse in 2026/27. The US Department of Agriculture forecasts a crop of 25.6 million tonnes, down 4 per cent, or about 945,000 tonnes, from the previous season. China and Australia account for almost all of the expected decline.

China produced close to a record 7.8 million tonnes in 2025/26 but USDA expects output to return to 7.3 million tonnes in 2026/27. Australia is facing another cyclical shortage of water and its production is forecast to fall by 300,000 tonnes.

Lower cotton prices have discouraged planting in some producing regions, with growers able to switch land into crops such as maize and soybeans. The outlook is far from settled, however. Cotton Outlook forecasts world production of 25.1 million tonnes, while the International Cotton Advisory Committee puts it at 26.2 million tonnes. The 1.1 million-tonne gap between the highest and lowest forecasts is unusually wide and shows how much uncertainty remains around the coming crop.

Cotton prices strengthened sharply during August, with nearby futures rising 13 per cent to end the month at US$1.99 per kg, their highest level since March 2024. They were 42 per cent above their level at the end of February. Reduced supply expectations played a part, while competing polyester prices also moved higher. Chinese 32-count polyester yarn, which competes directly with spun cotton yarn, ended August at US$1.80 per kg, up 11 per cent since February.

> "The figures leave cotton buyers facing a mixed picture. The crop is forecast to be smaller, but estimates vary substantially and planting decisions remain highly sensitive to relative returns from food crops"



The figures leave cotton buyers facing a mixed picture. The crop is forecast to be smaller, but estimates vary substantially and planting decisions remain highly sensitive to relative returns from food crops. Apparel demand, which remains highly volatile, will also determine whether tighter production translates into sustained price pressure.

Away from the two dominant apparel fibres, hemp continues to record some of the strongest production growth in the natural fibre group. DNFI estimates world hemp fibre output at 399,000 tonnes in 2025 and forecasts 429,000 tonnes in 2026. Production has risen from about 75,000 tonnes in 2015 and now accounts for 1.2 per cent of natural fibre supply.

The direction is positive, although the US figures show that growth in volume does not necessarily mean stronger farm returns. US production of hemp grown outdoors for fibre rose 11 per cent to 30,527 tonnes in 2025, and harvested area increased 14 per cent. Average yields edged lower, however, and the crop's value fell 13 per cent to US$13.5m. The average price paid to farmers dropped from US$0.57 per retted kg in 2024 to US$0.46 in 2025.

Hemp is still small, in volume terms, beside cotton, and a considerable share of production goes into applications outside mainstream clothing. Its expansion nevertheless gives textile developers a larger potential raw-material base, particularly where brands are looking for bast fibres that can be blended into apparel yarns.

Silk remains much smaller in volume, albeit far higher in price. World production is estimated to have risen from 97,351 tonnes in 2024 to 101,000 tonnes in 2025, with 105,000 tonnes forecast for 2026. This continues the recovery from the 2021 low of 86,000 tonnes, although output remains far below the 202,000 tonnes recorded in 2015.

Chinese grade 3A silk was quoted at about US$63.48 per kg at the end of August, little changed over the past three years. Silk accounted for only 0.3 per cent of natural fibre production in 2025, but volume alone understates its place in higher-value apparel and luxury supply chains.

Mohair and alpaca occupy similarly specialised positions. While the DNFI report does not provide separate production estimates for either fibre, its broader category for other animal fibres stands at 23,000 tonnes in both 2025 and 2026, compared with more than 933,000 tonnes of wool forecast this year. Their role is therefore concentrated in smaller, higher-value markets where fibre character and origin can carry more weight than scale.

> "Cotton still determines the overall direction of the sector, while wool's shrinking supply stands out against continued growth in synthetic fibre capacity."

Across all natural fibres, output is forecast to rise by 300,000 tonnes to 33.2 million tonnes in 2026. However, that headline increase conceals what is a very mixed – and in places volatile – picture across fibre types. Cotton is set for a sizeable fall and wool for another historic low, while much of the net growth comes from a rebound in jute, a fibre used far less extensively in apparel.

Over the past two decades, annual natural fibre production has ranged between 27.8 million and 34.9 million tonnes, with no statistically significant upward trend. Cotton still determines the overall direction of the sector, while wool's shrinking supply stands out against continued growth in synthetic fibre capacity.

Benin builds cotton-to-clothing industry



PARAKOU - Benin is expanding domestic textile and garment production as the West African country attempts to retain more of the value generated by its cotton crop.

The country produced 1.15 million bales of cotton during 2025/26, making it Africa's largest producer. Cotton remains its principal agricultural export and supports more than two million people, directly or indirectly.

Historically, much of the crop was exported as raw fibre, with Bangladesh among its largest customers. However, Benin is now encouraging local processing and the export of finished products through the Glo-Djigbé Industrial Zone, known as GDIZ.

Located near the commercial capital Cotonou, the public-private development includes spinning, knitting, weaving and garment-making facilities. It currently processes around 40,000 tonnes of Beninese cotton annually and produces between seven and ten million garments.

International clothing companies represented at the site include U.S. Polo Assn. and French retailer Kiabi, while the wider industrial zone is expected to attract at least US$1.4bn of investment during its first phase.

Benin's current account deficit narrowed from 6.2 per cent of gross domestic product in 2024 to 5.7 per cent in 2025, according to the African Development Bank.

A network of at least 183,746 cotton producers, organised through more than 2,200 village cooperatives, supplies Benin's cotton sector.

The strategy reflects a wider debate across African cotton-producing countries about how little value remains locally when raw fibre is exported for processing, usually in Asia.

Spinning, fabric manufacture and garment production offer considerably more employment than cotton cultivation and ginning alone.

Benin is attempting to build those later production stages alongside its established farming base. Its model could potentially offer a blueprint for other African producers seeking a larger share of the textile value chain.

Michell and Endeavour join Australian wool operations



ADELAIDE - Two of Australia's largest wool businesses are combining their buying and broking operations in a deal intended to give growers more direct access to processors, international customers and clothing brands.

Michell Wool and Endeavour Wool Exports have established a new business called Michell Endeavour.

Michell Wool is Australia's oldest and largest exporter of processed Australian wool, with a history stretching back 156 years. Melbourne-based Endeavour was established in 2017 and has grown to become the country's second-largest exporter of raw wool.

The companies said their existing trading, processing and export operations would continue to operate independently, with the new entity concentrating on direct buying, broking and services connecting woolgrowers with the international market.

Michell Wool chairman David Michell will chair Michell Endeavour, while Endeavour founders Josh Lamb and Stuart Greenshields will join its board alongside Michell managing director and chief executive Andrew Luxton. Agribusiness executive Greg Pearce has been appointed general manager.

The companies said the combined operation would offer growers traceable sourcing options, Australian-based processing and greasy-wool export contracts. It would also provide market information and direct routes to overseas buyers.

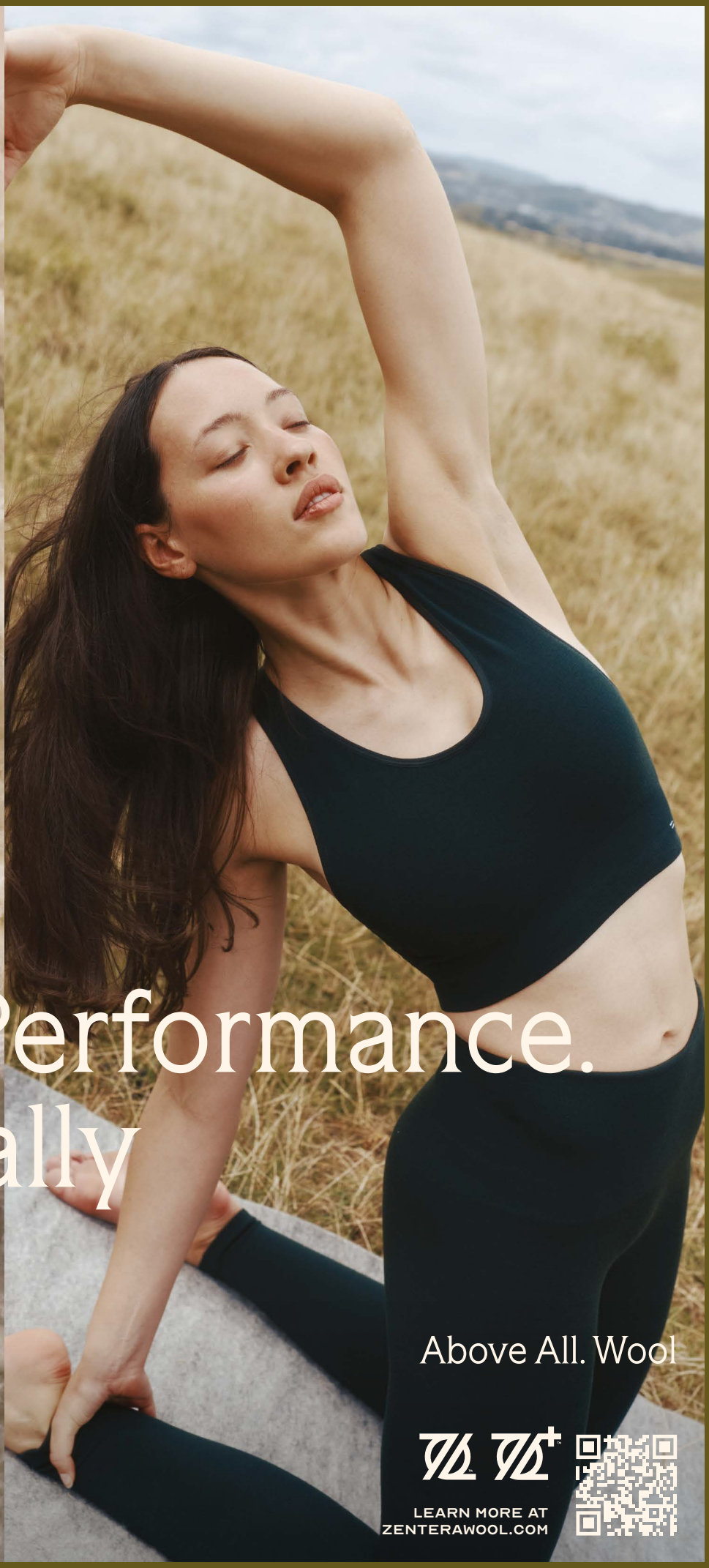
For apparel brands, the merger brings buying, processing and traceability capabilities into a more closely connected operation. Such services are becoming increasingly important as brands seek more information about fibre origin and the farms supplying their wool.

However, the deal arrives at a difficult point for Australian wool production. Sheep numbers and the volume of wool offered for sale remain historically low, despite a recovery in prices during 2026 (see pages 32-33).

Lower supply has increased competition among exporters for suitable wool. At the same time, growers require stronger returns if wool-producing breeds are to compete with sheep raised primarily for meat.

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